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CHRONIC BRONCHITIS— A PRIMARY DISEASE*

A. KOVAL, M.D.,
A. E. ALWAY, M.D., F.R.C.P.[C.], and
N. J. ENGLAND, M.D., F.R.C.P.[C.],
London, Ont.

CHRONIC BRONCHITIS as a primary disease entity is said to be rare.¹⁻³ Many authorities state that study of patients with chronic cough, expectoration and dyspnoea will reveal some specific condition, such as bronchogenic carcinoma, pulmonary tuberculosis, bronchiectasis, asthma, or cardiovascular renal disease. However, in the vast majority, investigation fails to disclose any of these entities. Ten years ago in our chest clinic, we viewed a diagnosis of chronic bronchitis with suspicion and dissatisfaction. We now find that we are making the diagnosis with increasing frequency, after complete investigation of the patient. Our present experience indicates that a simple chronic bronchial irritation and inflammation may be by far the commonest cause of the bronchitic syndrome.

The bronchitic syndrome has been variously labelled and synonyms include asthmatic bronchitis, chronic recurrent bronchitis, chronic bronchitis with bronchospasm and chronic exudative bronchitis.

We require fulfilment of certain criteria before making a diagnosis of chronic bronchitis. Chronic cough, expectoration, wheezing and dyspnoea must have been present for several years. Physical examination on at least two separate occasions must have demonstrated diffuse rhonchi. Chest radiographs and bronchograms must be within normal limits and examination of the cardiovascular system negative. Of great importance is a clear differentiation from bronchial asthma. We consider bronchial asthma an episodic disease with periods of acute bronchospasm requiring epinephrine, and with symptom-free intervals between attacks. Our chronic bronchitic exhibits more constant bronchospasm of less severity, and we exclude from the bronchitic group any patient who has had attacks of severe bronchospasm requiring epinephrine.

The incidence of chronic bronchitis in this area was determined by studying the admissions to the chest service during the years 1949-1954. It was found that an over-all average of 50% of the patients were diagnosed on discharge as chronic bronchitis.

For the five-year period 1949-1954, 168 case histories of patients under 45 years of age diagnosed as chronic bronchitis were gathered from the medical files of Westminster Hospital, London. From that group, 106 cases were chosen as fitting our criteria for a diagnosis of chronic bronchitis. These cases had had various investigations which included chest radiography, bronchography, sputum cultures, ear, nose and throat consultation, and allergy studies. Only 20 cases were found in which all of the above-mentioned investigations had been performed. These 20 patients were personally interviewed and examined and their present status was assessed. The files of the remaining 86 cases were thoroughly studied. Although they are not included in this series because of lack of some investigative procedure, they resembled rather closely the 20 cases to be presented.

RESULTS OF CLINICAL STUDY OF 20 CASES OF CHRONIC BRONCHITIS

The results of our study are presented in table form and discussed briefly.

All patients were male, under 45 years of age. The average age was 37 years. The age of onset of symptoms was difficult to ascertain. All of the veterans had had overseas duty in England, and all but two dated the onset of their symptoms to this exposure to cold, damp climate. The other two had symptoms previous to overseas duty, but felt that these were aggravated while in the service. Eight patients dated the onset of their symptoms to a bout of pneumonia. The age at onset of symptoms varied between 18 and 32, with an average of 24 years. Eighteen of the veterans have lived in Southwestern Ontario all their lives except for overseas service. Of the other two, one came from Halifax, the other from Montreal, but both have lived in this area for the past five years.

Occupations were varied, and most of the patients have been compelled to obtain lighter work because of dyspnoea. None of the occupations was of a particularly dusty nature.

*From the Chest Service, Department of Veterans Affairs, Westminster Hospital, London, Ontario.

TABLE I.—CLINICAL FINDINGS

	Name	Age	Age at onset	No. of hospital admissions	Geography	Occupation at present	Smoking No. cigarettes per day	Allergic tests	Bronchogram	Cardiovascular examination	Radiograph of chest	Sputum per day	Hæmoptysis	Chest examination	Time lost from work per year	Disability
1	T.B.	33	21	4	W.O. England	Truck driver	30	D & F	Neg.	Neg.	Mild emphysema	1 cup	Flecks	Mild emphysema, no results from desensitization	6 mths.	Severe—deteriorating, no results from desensitization
2	A.H.	41	29	2	W.O. England	Lathe operator	20	Neg.	Neg.	Neg.	Neg.	1 cup	Neg.	Rhonchi, increased A-P diameter	1 wk.	Moderate
3	W.N.	32	20	3	W.O. England	Farmer	10	Neg.	Neg.	Neg.	Neg.	½ cup	Flecks	Rhonchi	1-2 dys.	Mild
4	L.B.	30	27	2	Nova Scotia Korea	Soldier	10	Neg.	Neg.	Neg.	Neg.	¼ cup	Neg.	Rhonchi	1-2 dys.	Mild
5	S.F.	32	18	3	W.O. England	Labourer	10	Neg.	Neg.	Neg.	Neg.	teasp.	Neg.	Rhonchi	2-3 wks.	Moderate
6	E.F.	35	22	3	W.O. England	Car salesman	7	Neg.	Neg.	Neg.	Neg.	teasp.	Neg.	Rhonchi	2-4 wks.	Moderate
7	W.S.	39	25	2	Montreal England	Cleaner	10	Neg.	Neg.	Neg.	Neg.	½ cup	Flecks	Rhonchi	2-3 wks.	Moderate
8	W.M.	38	22	3	W.O. England	Painter	20	Neg.	Neg.	Neg.	Neg.	½ cup	Neg.	Rhonchi, increased A-P diameter	4 wks.	Moderate
9	H.W.	44	30	3	W.O. England	Tool and die worker	20	Neg.	Neg.	Neg.	Neg.	¼ cup	Flecks	Rhonchi	2 mths.	Moderate
10	W.L.	41	29	2	W.O.	Recreation director	10	Neg.	Neg.	Neg.	Neg.	¼ cup	Neg.	Rhonchi	1-3 dys.	Mild
11	D.S.	28	18	3	W.O. England	Car salesman	15	Neg.	Neg.	Neg.	Mild emphysema	1 cup	Flecks	Rales and rhonchi, mild emphysema	3 mths.	Severe—deteriorating
12	R.W.	35	23	1	W.O.	Clerk	10	Neg.	Neg.	Neg.	Mild emphysema	½ cup	Neg.	Rhonchi, mild emphysema	1 wk.	Moderate
13	F.W.	42	28	4	W.O.	Railroad	20	Neg.	Neg.	Neg.	Mild emphysema	1 cup	Flecks	Rhonchi, emphysema	6 mths.	Severe—deteriorating
14	R.G.	43	31	4	W.O. England	Taxi driver	25	Neg.	Neg.	Neg.	Mild emphysema	1 cup	Flecks	Rhonchi, emphysema	5 mths.	Severe—deteriorating
15	A.C.	30	22	2	W.O.	Clerk	20	Neg.	Neg.	Neg.	Neg.	¼ cup	Neg.	Rhonchi	2 mths.	Moderate
16	W.S.	43	29	2	W.O. England	Factory	10	Neg.	Neg.	Neg.	Neg.	1 cup	Neg.	Rhonchi	2 wks.	Moderate
17	J.M.	38	24	2	W.O. England	Clerk	15	D & F	Neg.	Neg.	Neg.	½ cup	Neg.	Rhonchi	2-3 wks.	Moderate, desensitization neg.
18	S.G.	32	19	4	W.O. England	Army	15	Neg.	Neg.	Neg.	Neg.	½ cup	Neg.	Rhonchi	2 wks.	Mild
19	J.W.	43	31	1	W.O. England	Railroad	20	D & F	Neg.	Neg.	Neg.	½ cup	Flecks	Rhonchi	2 wks.	Moderate, desensitization neg.
20	J.S.	32	18	1	W.O. England	Salesman	20	Neg.	Neg.	Neg.	Mild emphysema	1 cup	Flecks	Mild emphysema, rhonchi	2 wks.	Moderate—increasing

Legend: W.O.—Western Ontario. D & F—Dust and Feathers.

All 20 were moderate to heavy smokers, consuming 10 to 20 cigarettes per day. All commenced smoking at an average age of 17 years. A few temporarily discontinued smoking and subjectively improved. None completely stopped smoking.

Varying amounts of sputum, from a tablespoonful to a cupful per 24-hour period, were raised. Most of the sputum was coughed up on first rising in the morning and during the next few hours. For the rest of the day, the patient was relatively free from sputum, cough, and wheezing. None admitted to frank hæmoptysis, but five noticed flecks of blood on severe coughing.

Physical examination showed no gross clinical emphysema. Chest movement was only slightly restricted in three cases. Rhonchi were heard in all on occasion and especially during exacerbations; moist rales were infrequently heard. There was no clinical evidence of cardiovascular disease in any of the cases.

Sputum cultures revealed the usual growth of flora that inhabits the bronchial tree, usually *Neisseria*, *Streptococcus viridans* and pneumococci. Ear, nose and throat consultations and sinus radiography did not reveal evidence of polyps, sinusitis or rhinitis. Allergy tests proved negative except for three patients who had positive tests for house dust and feathers.

Chest radiographs revealed no parenchymal involvement, but in some cases early to moderate radiographic signs of emphysema. Bronchograms failed to reveal any evidence of bronchiectasis or other lesion.

It was difficult to assess disability because so many factors were involved. Time lost from work was taken as a basis. This ranged from one week to six months a year, with an average time loss of one month per year. All claimed that their disability was increasing and that they were losing more time from work yearly.

In summary, our typical case of chronic bronchitis is in a male veteran of 37 years who has had symptoms for 10 years and who has lived in Southwestern Ontario most of his life. The symptoms consist of morning cough and sputum of variable amount with variable wheezing and dyspnoea. He is a moderate to heavy smoker who will not stop smoking. He has symptoms the year round, and several times a year has exacerbations with fever, increased cough, sputum and dyspnoea, necessitating treatment. The positive findings were scattered rhonchi and occasional moist rales. All investigation is negative. Disability increases yearly; he loses more time from work; and he becomes a poor competitor on the labour market.

PATHOLOGY

In our series, consisting of a young age group, morbid anatomy was not studied. The work of others will be mentioned briefly.⁴⁻⁷

In mild cases of chronic bronchitis, the main feature noted was hypertrophy of the mucus-secreting glands and goblet cells of the bronchi. In necropsy material of advanced cases of chronic bronchitis, there was a gradual change from zones of acute inflammation to fibrosis and scarring, which suggested older and more permanent disturbance.⁴

Others⁶ state the possibility that focal trigger areas of local bronchial obstruction also play an important role in the development of generalized pulmonary emphysema through autonomic reflex pulmonary arterial and bronchial spasm.

Also suggested⁷ was the possibility that occlusive circulatory changes of the bronchial arteries played a significant role in the production of lung atrophy.

TREATMENT

Treatment for these patients has been disappointing. The disease appears to progress in spite of all efforts. In the later stages, certain complications develop, such as emphysema and right heart failure. Patients were urged to give up smoking, to avoid undue exposure to the elements, and to seek early medical care during exacerbations. The following active measures are the ones that we most commonly employ.

Expectorants.—In expectorants, we prefer 7-10 minims of a saturated solution of potassium iodide

in a glass of warm water, three to four times a day.

Antispasmodics.—Bronchodilators can be given orally, rectally, or by inhalation. Oral administration of combinations of ephedrine, phenobarbital and aminophylline, use of aminophylline suppositories, and inhalation of ephedrine and isopropyl arterenol (Isuprel) give the best results.

Antibiotics.—Long-term prophylactic antibiotic administration has not stood the test of time. However, the appropriate antibiotic, commenced early, shortened the course of the exacerbation.

In our experience, procaine penicillin in doses of 300,000 units twice daily for 7 to 10 days was effective in the majority of cases.

Allergy tests.—As part of the treatment, all of these patients should have allergy studies, but it has been our experience that the therapeutic rewards are small. Desensitization to house dust and feathers, and substitution of a foam rubber pillow, did not seem to improve the signs or symptoms.

Emphysema.—In emphysema, correct breathing exercises should be taught. Pneumoperitoneum causing elevation of the diaphragm and abdominal binder may occasionally help.

Right heart failure.—Right cardiac failure with oedema must be treated by the usual means of salt restriction and mercurials. Digitalis in the usual doses should be used.

Oxygen.—Oxygen should be used with caution because of the occasional development of respiratory acidosis.

Steroid therapy.—In our experience, treatment of chronic bronchitis with steroids has not been helpful.

DISCUSSION

As stated previously, many authors are quite dogmatic regarding the rarity of primary chronic bronchitis and yet our investigation reveals the opposite to be true, provided these cases are not classified as bronchial asthma. It is our impression that repeated acute infections of the bronchial tree are definite factors in the development of chronic bronchitis.

Smoking is a definite aggravating factor and may possibly be an important etiological factor as well.⁹⁻¹¹ This latter impression is suggested by the early age at which smoking was commenced, the degree of smoking and the definite improvement in symptoms when the habit was discontinued.

The question arises why all "smokers" are not afflicted with bronchitis. This could be due to a constitutional factor. There was no significant family history in the patients reviewed in this series, but it has been specifically mentioned in other reviews.⁸ These patients are considered to have an underlying abnormality of the respiratory mucosa which renders it less resistant to pulmonary infections and thus more likely to be the site of development of a chronic infection.

The treatment available today is not curative and the results are anything but encouraging. Some patients, however, have obtained reasonable remissions with cessation of the tobacco habit.

It would appear that two of the most important factors in the development and progression of the disease may be a congenital defect in the bronchial mucosa and cigarette smoking. Other important factors are climate, repeated bronchial infections and air pollution.

SUMMARY

Chronic bronchitis is frequently a primary entity, and not secondary to some underlying disease as stressed by most modern textbooks of medicine.

A clinical study of 20 cases of chronic bronchitis is presented.

Theories of the pathogenesis of the disease are reviewed.

Treatment is largely symptomatic with vigorous attacks on each exacerbation. The morbidity of the disease is high and many cases progress to severe complications despite therapy.

It is our feeling that chronic bronchitis represents the most important single problem in the field of non-tuberculous chest disease, producing a high degree of morbidity and the potentially dangerous complications of emphysema and pulmonary heart disease. It follows, therefore, that this disease requires increased clinical investigation.

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RÉSUMÉ

La bronchite chronique est habituellement considérée comme une manifestation secondaire d'une entité pathologique plus importante comme le carcinome bronchique, la tuberculose pulmonaire, la bronchiectasie ou l'asthme. Les auteurs du présent article en sont cependant venus à la conclusion qu'il existe une bronchite chronique primaire en l'absence de toute autre lésion concomitante. Le dépouillement des archives de l'hôpital Westminster (London, Ontario) leur a fourni les dossiers de 20 malades chez qui on avait porté ce diagnostic et dont l'examen clinique avait montré la présence d'expectorations purulentes, de toux et de dyspnée avec sibilance et rhonchus, alors que les examens ancillaires étaient négatifs. Ces symptômes présents depuis au moins 10 ans causaient dans ce groupe un degré d'absentéisme important. Les différentes formes de traitement n'apportèrent que des résultats décevants. Les expectorants, les antibiotiques ou les antispasmodiques ne purent modifier l'évolution à longue échéance du processus. L'usage du tabac en aggrava le cours.

CÆSAREAN SECTION AT THE WINNIPEG GENERAL HOSPITAL MATERNITY PAVILION, 1951-1956*

C. R. BRADFORD, M.D.,† Winnipeg, Man.

DURING the last 15 years in most obstetrical hospitals, there has been a gradual increase in the relative number of Cæsarean sections performed. The advent of antibiotics, readily available blood transfusions, better prenatal care, and better training in obstetrics, have reduced the mortality of the operation until it has become a relatively safe surgical procedure. With the increased safety, there has been a general broadening of the indications for Cæsarean section, and consequently it is being used more frequently as a solution for difficult problems. The ideal incidence of Cæsarean section is a figure difficult to establish. However, the aim of all obstetrical practice is to reduce to a minimum the number of women and infants who die or are left injured as a result of childbirth, and in achieving this end Cæsarean section is one of our more valuable tools. Therefore it is extremely important to

attempt to define the scope and limitations of the operation.

With this in mind the present study of Cæsarean sections was undertaken. Although the series is small, it is hoped that the over-all picture will be worth while in comparing obstetrics as practised in this area with that of other large obstetrical centres.

MATERIALS AND METHODS

The Maternity Pavilion of the Winnipeg General Hospital was first opened in 1950. This survey covers the first five complete years of operation of this unit as a hospital limited to the care of maternity patients. The data presented here were taken from the records from January 1, 1951 to January 1, 1956. To obtain this information over 500 charts were studied personally, and about 30 specific items of information were tabulated for each patient. Procedures included as Cæsarean sections are those that were performed on a patient from the 28th week of pregnancy onward, or those in which the fetus weighed more than 500 grams.

Incidence.—During the five years under study there was a total of 19,379 deliveries. Of this number, 476 were by Cæsarean section. This is an incidence of 2.45%. In 1951 the incidence was 2% and since that time there has been a gradual in-

*Presented at the monthly staff meeting of the Winnipeg General Hospital, February, 1957.

†Resident in Obstetrics and Gynaecology, Winnipeg General Hospital.

crease to 2.8% in 1955. There is a notable difference in the relative number of Cæsarean sections performed on public ward patients and on private patients (Table I). The reason for this difference is not clear. Possibly a larger proportion of primigravid patients are under the care of private physicians, and there may also be a more rigid adherence to strict indications where patients on the teaching service are concerned.

TABLE I.—INCIDENCE OF CÆSAREAN SECTION

Total deliveries	Private	Staff	Private sections	Staff sections
19,379	16,904	2475	445 - 2.4%	31 - 1.2%

Maternal mortality.—There were no maternal deaths due to, or associated with, Cæsarean sections. During the same period of time there were seven maternal deaths in 18,903 vaginal deliveries, an incidence of 3.7 per 10,000. On examination of the records of the seven patients who died it was found that in no case would a Cæsarean section have influenced the final outcome.

Type of Cæsarean section.—In the majority of obstetrical hospitals, there has been a great reduction in the number of classical Cæsarean sections during the past 10 years. This is also true of Winnipeg. However, of the 476 sections studied, 85 or 18% were of the classical type. Of these, 62 were done by physicians and surgeons who do not limit their practice to obstetrics and gynaecology. There was one Cæsarean hysterectomy carried out because of uncontrollable bleeding at the time of a lower segment section. Only one extraperitoneal section was done and that was in a patient who had undergone a prolonged labour with ruptured membranes and infected amniotic fluid. A transverse incision in the uterus was used with nearly all lower segment procedures.

TABLE II.—TYPE OF CÆSAREAN SECTION

Patients	Classical	Lower segment	Cæsarean hysterectomy	Extraperitoneal
Staff.....	2	28	0	1
Private.....	83	361	1	0

Indications for Cæsarean section.—The classification of modern indications for Cæsarean section is extremely difficult. The most inclusive classification is that of Bryant (1950) and therefore it is used in this analysis. The major indications in this classification are as follows:

1. Mechanical obstruction to delivery: all cases of disproportion, malpresentation, malposition, and those cases in which the birth canal is blocked by tumour.

2. Bleeding: including placenta prævia, abruptio placenta, and bleeding of unknown origin.

3. Hypertensive disease: including essential hypertension and toxæmia of pregnancy.

TABLE III.—INDICATIONS FOR CÆSAREAN SECTION

	Primary sections 295	Repeat sections 181
1. Mechanical obstruction		
A. Maternal		
Fetopelvic disproportion...	35	91
Congenital dislocated hips...	1	2
Pelvic deformity.....	0	1
Spinal deformity.....	0	1
B. Fetal		
Transverse lie.....	8	4
Breech.....	6	6
Brow.....	2	1
Oblique lie.....	1	0
2. Bleeding		
Placenta prævia.....	74	14
Abruptio placenta.....	8	0
3. Hypertensive disease		
Pre-eclampsia.....	10	5
Essential hypertension.....	2	0
Eclampsia.....	0	1
Toxæmia with failed induction.....	10	0
4. Fetal indications		
Prolapse cord.....	4	1
Occult prolapse and fetal distress.....	4	0
Rising Rh antibody titre...	4	0
5. Functional anomalies		
Inertia.....	32	10
Cervical dystocia.....	2	0
Prolonged labour with fetal distress.....	2	0
Prolonged rupture of membranes.....	1	0
Postmaturity.....	1	0
Failed induction.....	2	0
Dystocia dystrophica syndrome.....		1
6. Abnormalities of pelvic organs		
Fibroids.....	5	1
Previous vaginal repair....	9	2
Cervical stenosis.....	0	1
Arcuate uterus.....	0	1
Serous cystadenoma of ovary.....	1	0
7. Concurrent disease		
Diabetes mellitus.....	15	6
Herpes gestationis and twins	1	0
Diverticulitis with pelvic abscess.....	1	0
8. Miscellaneous		
Elderly primigravida.....	14	
Elderly primigravida with breech.....	8	
Previous obstetrical difficulties.....	13	2
Previous fetal deaths near term.....	3	
Failed forceps.....	3	
"Extra valuable" baby....	1	
Previous subarachnoid hæmorrhage.....	1	
Previous myomectomy....	1	
Previous surgery for cerebral aneurysm.....	1	
Eclampsia with first pregnancy.....	1	
Two previous spinal fusions	1	
Previous osteomyelitis spine	1	
Recurrent abnormal fetus..	1	
Recent repair rectal prolapse.....	1	
Ventral hernia.....	1	
Previous repair fistula....	1	
Psychological reasons.....	1	
Previous carcinoma of rectum with colostomy....	1	
Varicose veins.....		1
Rigid spine.....		2
Patient's request.....		1
Previous osteomyelitis hip..		1
Previous hysterotomy.....	54	4
No indications given.....		11

- 4. Fetal indications: fetal distress, prolapse cord and Rh sensitization.
- 5. Functional abnormalities: all types of inertia, cervical dystocia and failure to go into labour.
- 6. Anatomical abnormalities, including previous vaginal repairs.
- 7. Concurrent and intercurrent diseases.
- 8. Previous Cæsarean section.
- 9. Miscellaneous.

There were 295 primary Cæsarean sections, 177 repeat sections, and 4 sections following previous hysterotomy. For primary sections, more than one indication was often given and in these cases the most urgent or most important indication was chosen, a method obviously open to individual bias. However, any other method or analysis is impractical. The repeat sections were also analyzed in an attempt to determine the original indication for section. In 22 of these no reason was given in the history or consultation. The results of the analysis of these two groups are shown in Table III.

All sections were classified as elective or emergency. Those in which there were obstetrical or medical complications that would probably influence the immediate outcome for mother or baby were considered as emergency procedures. In essence, the majority of sections in which the patient was admitted to hospital the day before an "elective" section were classified as "elective". There were 174 emergency and 302 elective sections. Almost all of the repeat sections were elective. Thirteen patients had elective section for disproportion and 13 elderly primigravidas had elective primary section without trial of labour.

To provide easily interpreted figures for comparison of the relative frequency of indications for Cæsarean sections, the indications are calculated on a percentage basis as shown in Table IV.

TABLE IV.—FREQUENCY OF INDICATIONS FOR PRIMARY AND SECONDARY CÆSAREAN SECTIONS

Indications	Primary sections	Repeat sections
1. Mechanical factors.....	17.9%	57.8%
2. Bleeding.....	27.8%	7.7%
3. Hypertensive disease.....	7.6%	3.4%
4. Fetal distress.....	4.1%	0.6%
5. Dysfunction.....	13.5%	6.2%
6. Abnormalities of genital tract.....	5.1%	2.8%
7. Concurrent disease.....	5.1%	3.4%
8. Previous obstet. difficulties.....	4.3%	
9. Elderly primigravida.....	4.7%	
10. Elderly primigravida (breech).....	2.7%	
11. No reason given.....		12.4%
12. Miscellaneous.....	7.2%	3.8%

Anæsthetics.—A marked change has taken place over the five-year period in the type of anæsthetic agent employed for Cæsarean sections. During the first half of this time anæsthesia for vaginal deliveries was administered by the intern staff, with qualified anæsthetists for Cæsarean sections only. Since 1954 a full-time qualified anæsthetic staff has been available for maternity cases. This has resulted in great improvement in the anæsthesia provided.

When the Maternity Pavilion first opened, ether-chloroform mixture was used for most vaginal deliveries and procaine spinal for most Cæsareans. Now cyclopropane, nitrous oxide, and oxygen are used for most vaginal deliveries, and this combinations, plus thiopentone (Pentothal) and relaxing agents, is used in the majority of Cæsarean sections.

The change in the use of various anæsthetic agents for Cæsarean section is well illustrated in Table V.

TABLE V.—TYPE OF ANÆSTHETIC

Year	General	Spinal procaine	Spinal pontocaine	Local	Other
1951	24	36	0	6	
1952	28	53	0	7	
1953	47	32	9	3	
1954	80	6	27	0	Nupercaine 1
1955	89	3	26	0	

Morbidity and complications.—Table VI shows incidence of morbidity in each type of Cæsarean section. Cæsarean hysterotomy and extraperitoneal sections were omitted because of their rarity.

TABLE VI.—MORBIDITY OF CÆSAREAN SECTION

	Total	Lower segment	Classical
Morbidity.....	16.1%	15.4%	18.8%

Table VII lists the types and frequency of the various complications. It is interesting to note the large group of patients who had pyrexia of undiagnosed origin. Tissue trauma and intraperitoneal spill of blood and liquor amnii are possible factors in these cases and some may be undiagnosed infections of the genital and/or urinary tracts.

Antibiotics were used liberally, but during the last two years there has been a noticeable trend away from the use of antibiotics prophylactically.

TABLE VII.—COMPLICATIONS OF CÆSAREAN SECTION

Pyrexia of unknown origin.....	50
Ileus (requiring intubation).....	9
Thrombophlebitis.....	8
Severe bleeding at operation (requiring more than 1000 c.c. blood).....	7
Endometritis and parametritis.....	8
Pyelonephritis.....	3
Pneumonia.....	3
Pulmonary embolus.....	2
Wound abscess.....	2
Atelectasis.....	1
Accidental incision of bladder.....	1
Pyometra.....	1
Peritonitis.....	1
Pelvic abscess.....	1
Inhalation of vomitus (requiring endoscopy).....	1

Transfusions.—Blood is provided for the Maternity Pavilion by the Red Cross Transfusion Service. Patients for elective section are usually grouped and matched for blood. In an extreme emergency there are always two bottles of Group O Rh-nega-

tive blood available for immediate use. Table VIII shows the number of patients receiving transfusions and the amount of blood given. Two patients required over 2500 ml. of blood. One of these had an unsuccessful induction for a dead baby due to erythroblastosis. At later section, bleeding was very heavy and 3000 ml. of blood was required. The stillborn baby was macerated. In retrospect, this hæmorrhage may have been due to afibrinogenæmia. The other patient with massive hæmorrhage had a Cæsarean section for placenta prævia. No severe transfusion reactions were recognized but several minor allergic phenomena occurred.

TABLE VIII.—USE OF TRANSFUSIONS WITH CÆSAREAN SECTION

Year	Blood given c.c.					
	500	1000	1500	2000	2500	Over 2500
1951	17	3	3	1		1 x 3000
1952	17	7	2	4	1	1 x 4500
1953	13	8	4	3		
1954	17	5	7	0		
1955	4	5	3	2		

Sterilization.—Tubal ligation was carried out at the time of Cæsarean section in 1937 or 20% of cases. In all operations for sterilization the concurrence of a consultant is necessary. The most common sterilization procedure used was the Pomeroy method. The indications given for sterilization are multiple and varied, and in many cases sterilizations were done arbitrarily after the second Cæsarean section. Of the 36 patients sterilized after one section, all except four were multiparous women.

TABLE IX.—STERILIZATION IN RELATION TO NUMBER OF SECTIONS

Section following which sterilization was performed	Total number of patients	Number of sterilizations	Percentage sterilized
First.....	295	36	12.2%
Second.....	137	75	54.4%
Third.....	34	22	64.7%
Fourth.....	5	4	80.0%

Table IX shows the number of patients sterilized in relation to the number of sections they have had. In Table X the indications for sterilizing four primigravid women after one section are recorded, and Table XI lists the indications for sterilization of the multiparous women after their first section.

TABLE X.—PRIMIPAROUS PATIENTS STERILIZED AFTER FIRST SECTION

1. Po G i Age 37	Elderly primigravid. No other indication recorded.
2. Po G i Age 46	Diabetes and essential hypertension
3. Po G i Age 31	Recent subarachnoid hæmorrhage.
4. Po G i Age 27	Uterine fibroids.

Placenta prævia.—Seventy-four patients had a Cæsarean section for placenta prævia. An attempt was made in all cases to classify the degree of placenta prævia present, but lack of standard definition

TABLE XI.—INDICATIONS FOR STERILIZATION AFTER FIRST SECTION IN MULTIPAROUS PATIENTS

Previous vaginal repair.....	5
Toxæmia of pregnancy.....	5
Psychiatric indications.....	3
Diabetes.....	2
Patients' request.....	3
Multiparity.....	2
Previous obstetrical difficulty.....	2
Central nervous system lesions.....	2
Tuberculosis, Rh sensitization, surgery for congenital cerebral aneurysm, recurring congenital abnormalities of fetus, Hodgkin's disease, ventral hernia, mitral stenosis, repeated premature labour.....each	1

rendered this unsuccessful. The general impression was that the placenta was Type III or Type IV in the majority of patients sectioned for placenta prævia. Although x-rays were frequently used as a diagnostic aid, seldom were they considered adequate evidence for elective section. A double set-up procedure for aseptic vaginal examination before operation was carried out in about 50% of cases.

There were eight neonatal deaths associated with Cæsarean section for placenta prævia. This results in a gross fetal loss of 10.8%. In six of the neonatal deaths prematurity was the major factor. The average length of gestation for these six patients was 34 weeks.

Of the 74 patients with placenta prævia, 47 or 63% were transfused with 500 ml. or more blood. There were no maternal deaths. As the total number of cases of placenta prævia has not been derived, the section rate for this condition is not calculated.

Prolapsed cord.—A diagnosis of prolapse of the cord was made on four occasions and two fetal deaths were attributed to this cause. In four other patients a diagnosis of "occult" cord prolapse was made mostly on the basis of signs of fetal distress without other obvious cause. None of these babies died. It was apparently quite difficult to prove a diagnosis of occult cord prolapse even at the time of section.

Fetal and neonatal deaths.—There were 479 babies delivered, including three sets of twins. Seventy-three (15%) weighed under 5½ lb. and were considered premature. Amongst the elective sections there were 16 (3.3%) premature babies and of this group three died, prematurity being the main factor in the cause of death. Of the 479 babies, 6 (1.4%) were stillborn, and 25 (5.2%) died in the neonatal period. This resulted in a gross fetal loss of 6.4%.

Table XII summarizes the causes of the neonatal deaths, and Table XIII lists the indications for

TABLE XII.—CAUSES OF NEONATAL DEATHS

Prematurity and atelectasis.....	5
Prematurity and hyaline membrane.....	10
Prematurity and congenital anomalies.....	4
Prematurity and anoxia.....	1
Prematurity and pneumonia.....	1
Hyaline membrane disease.....	1
Anoxia.....	1
Neonatal pneumonia.....	1
Spina bifida and pneumonia.....	1

TABLE XIII.—INDICATIONS FOR CÆSAREAN SECTIONS
ASSOCIATED WITH STILLBIRTHS AND NEONATAL DEATHS

Placental prævia.....	8
Diabetes.....	4
Toxæmia.....	4
Rh sensitization.....	3
Disproportion.....	3
Abruptio placenta.....	2
Prolapse cord.....	2
Inertia.....	1
Transverse lie.....	1
Elective repeat section.....	3
Total.....	31

Cæsarean section where stillbirth or neonatal deaths occurred.

Of the 6 stillbirths, death was attributed to anoxia in three, to erythroblastosis in two and to intrauterine pneumonia in one.

COMMENT

An analysis of Cæsarean sections provides an indication of the type of obstetrics practised in a hospital or area. As mentioned in the opening paragraph, this series is too small to be of statistical significance. However, it does show developments during what might be called the formative years of the Maternity Pavilion of the Winnipeg General Hospital.

The incidence of Cæsarean section may be considered as somewhat low, but it compares favourably with many large series such as those of Bryant in Cincinnati or Haskins in St. Louis. Some reports show Cæsarean section rates as high as 10%. One wonders, even in the age of broadening indications, what further conditions are included to account for the high percentage of abdominal deliveries. In this present study an increase of Cæsarean section rate would have done nothing to decrease maternal mortality. Possibly a close study of obstetrical factors responsible for stillbirth and neonatal deaths might bring to light further instances where section might be employed to advantage. However, it is unlikely that fetal factors would suggest an increase of any more than 1%.

A relatively high number of classical Cæsarean sections are still being performed. The advantages of the lower segment procedure are well known and, although there is a small place for classical sections, a rate of 18% is probably too high. Cæsarean hysterectomy and extraperitoneal section are seldom performed here. The place for these procedures is controversial but there appears to be no reason to regret their limited use in this hospital.

Previous Cæsarean section is by far the most common indication for the operation. In future, with broader indications, operations for this reason will probably increase. This analysis shows that disproportion forms a large part of the original indications in the group of secondary Cæsarean sections. In the primary group it forms a much smaller proportion, which suggests that where disproportion

was not a reason for the original section, the patients are later delivered vaginally. This is not so. Few patients are delivered vaginally in this hospital after previous Cæsarean section. Views on this subject vary and are usually a matter of personal opinion. However, there is probably a wider place for subsequent vaginal delivery in those patients in whom the first section was carried out because of bleeding, toxæmia or uterine dysfunction.

Two other indications are interesting. These are the elderly primigravida and the patient in whom a diagnosis of disproportion is made without trial of labour. There were 26 patients in these groups. Are we justified in doing a Cæsarean section on such patients without trial of labour? Where there are no other hazardous factors and where excellent facilities for managing all cases are readily available, there are no contraindications to carrying out a trial of labour. If this were done, many of these patients might have a normal vaginal delivery.

The morbidity and complication rates compare favourably with those of other obstetrical units. In the present era of free use of antibiotics, morbidity is often difficult to assess. It is doubtful whether "prophylactic" antibiotics have much place except for the patient who has had a prolonged labour with ruptured membranes, or where repeated vaginal examinations have been done before operation. The danger of "masking" infections and the risk of sensitivity reactions are becoming more common problems. These are risks probably sufficient to contraindicate wide use of antibiotics merely for prophylaxis.

Available blood transfusions have done much to improve the outlook in hæmorrhage due to obstetrical complications. As with any useful tool, there are occasions when it may be abused. It is now realized that there are many dangers associated with the free use of blood, especially in a woman in the childbearing years. We are past the stage when the giving of a bottle of blood was regarded in the same light as the giving of glucose and water. A rational attitude where the pros and cons of giving blood are assessed seems to be prevalent. Some authorities on this topic state that one single transfusion has no place in modern management. Either the patient requires more than one bottle to combat shock and hæmorrhage or else she does not require it at all. During the last year covered by this survey there appeared to be a significant trend away from the single bottle transfusion.

The decision whether or not to sterilize the patient places a heavy responsibility on the surgeon. Not too infrequently we see a relatively young woman, previously sterilized by surgical means, again wishing to bear a child. Various social situations may have changed her life in such a way that this desire has assumed great importance in her mind. The tragedy of these patients can be avoided if the obstetrician carefully considers each sterilization procedure beforehand. The increasing safety of multiple lower segment operations gives rise to

some doubt whether arbitrary sterilization after the second Cæsarean section is warranted. This indication has been handed down from the time when Cæsarean section was a perilous procedure, and the time has come to reconsider its applicability to present-day obstetric practice.

The problem of placenta prævia has in many ways been simplified by changes in management during the past decade. Conservatism and the increasing use of Cæsarean section have resulted in fewer dead mothers and more live infants. An uncorrected fetal mortality of 10% compares well with that of other series. Prematurity appears to be the greatest cause of infant death due to placenta prævia treated by Cæsarean section. If any improvement in fetal survival is to be gained, it is towards this end that efforts should be directed. In this series three patients with placenta prævia had only one bottle of blood each and were delivered of infants that died because they were premature. There is always the possibility that conservatism may be pursued further, though not to the stage where a mother might be sacrificed.

Among the neonatal deaths in all Cæsarean sections in this series, prematurity was the biggest problem. It is worth while to consider that 16 (3.3%) of infants delivered by elective section were premature, as this emphasizes the importance of estimating correctly the size of the fetus and the date of confinement. Although accurate assessment may be difficult, it seems that improvement in these estimations will increase the fetal salvage. The question that comes to mind is this: would maternal risk be increased too much if more patients were allowed to commence labour before elective section was performed?

There are many other problems and questions associated with the use of Cæsarean sections and as yet many of the answers are missing. Statistics can never illustrate the difficulties and worries which may arise when caring for any particular patient. However, it is hoped that this study may be of some value in focusing attention on our own problems and suggesting ways in which some of the answers may be found.

I wish to express my appreciation to Dr. Elinor F. E. Black for her help in preparing this manuscript.

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RÉSUMÉ

Les indications de l'opération césarienne ont augmenté avec le progrès de la chirurgie. L'auteur fait ici l'analyse des cas traités à l'hôpital général de Winnipeg (pavillon de la maternité) de 1951 à 1956. Au cours de cette période d'observation, la fréquence de cette intervention a grimpé de 2.0% au début à 2.8% vers la fin. Aucune mortalité maternelle ne se produisit. Il est à noter que dans la même période, aucune des femmes mortes à la suite d'accouchements par voies naturelles n'aurait pu être sauvée par intervention césarienne. Les indications acceptées dans ce centre sont celles que Bryant a formulées en 1950. Parmi les patientes on comptait 295 primigestes et 177 cas de césarienne itérative. Les 476 interventions produisirent 479 enfants dont 15% pesaient moins de 5½ lb. (2,500 g.). On observa 74 cas de placenta prævia. Les interventions dites d'urgence se comptèrent à 174. On procéda à la ligature des trompes dans 20% des cas. Plusieurs poussées de fièvre post-opératoire d'origine inconnue furent observées sans toutefois donner lieu à des conséquences fâcheuses.

Les césariennes hautes classiques s'élevèrent à 18% du total; l'auteur juge ce nombre trop élevé. Il proteste également contre la tendance de considérer la primiparité chez une femme âgée comme une indication à l'opération, sans procéder à une épreuve du travail qui dans plusieurs cas montrerait la possibilité d'un accouchement normal. Les petites transfusions d'un seul flacon ne devraient jamais être prescrites puisque les risques de réactions qu'elles font courir à la malade sont plus graves que l'anémie qui résulte d'une si faible déperdition de sang. Le problème que pose la stérilisation de la femme après quelques césariennes itératives demande à être débattu de nouveau à la lumière des améliorations cliniques modernes puisque les données qui en forment l'indication ont été énoncées au temps où ces opérations comportaient des risques sérieux. Cette intervention offre certains avantages dans les insertions vicieuses du placenta, mais plusieurs de ces enfants meurent encore des suites de la prématurité.

RATE OF HEALING OF PULMONARY TUBERCULOSIS AS AFFECTED BY CHEMOTHERAPY

The degree and rate of healing in 54 inspissated cavities which closed without benefit of drugs were compared by Auerbach *et al.* (*Am. Rev. Tuberc.*, 76: 988, 1957) with the degree and rate of healing in 52 cavities which closed with chemotherapy.

Hyalinization of the cavity wall occurred earlier in the patients treated with antimicrobials. Early hyaline changes were present within two months after closure of cavity as compared with seven months after closure for the patients not treated with antimicrobials. Hyaline capsules were present in only 19% of the nontreated patients, with cavity closure up to three years. By contrast, 57% of the 23 treated patients, with cavity closure in less than five months, and all of the 29 patients with duration of closure from five to sixteen months, had hyaline capsules.

Calcification was first observed in small amounts 36 months after cavity closure in the untreated patients. In patients treated with antituberculous drugs, calcification was observed as early as two months after cavity closure. Calcification was observed in 28 (54%) of the patients treated with antimicrobial drugs, none of whom had a closed cavity for more than sixteen months, as against 15 (28%) of the 54 nontreated patients, in all of whom the duration of cavity closure was more than three years.

The duration of disease appeared to be associated with hyaline and calcifying changes in the treated patients, and possibly to a lesser degree in the nontreated patients. The rate of healing of the tuberculous cavities, as evidenced by calcification in the necrotic centre and hyalinization of the wall, is obviously accelerated under the influence of antimicrobial therapy.

DIAGNOSTIC RADIOLOGY AND LOW BACK PAIN*

A. J. M. GRIFFITHS, M.R.C.S., L.R.C.P.,
D.M.R.D.†

ONE OF THE MORE COMMON problems of general practice is the patient who complains of low back pain. This problem is not confined to general practice: a significant proportion of the work in the x-ray department of any large hospital is devoted to the attempted diagnosis of low back lesions.

A review of patients passing through the x-ray department of the University of Alberta Hospital in the first three months of 1956 showed that there were 316 examinations of the lumbo-sacral spine, an average of a little more than four each working day. It is not intended to draw any significant conclusions from this small series but merely to use it as an example from which to make some observations. There are, of course, many causes of pain in the back and it is quite impossible to deal with them all in a short paper. I hope to cover some of the conditions in which diagnostic radiology can be helpful and to pay particular attention to limitations, which I think are worth emphasizing.

Before looking at the figures, it would be appropriate to say a few words about technique. It is common knowledge that the exposure required to produce satisfactory radiographs of the lumbar spine is considerable and it is therefore not practicable to attempt such examinations with small-output portable apparatus, except in very exceptional circumstances. Accurate positioning is required: it is possible for the technician to produce quite a marked scoliosis by inattention to detail when antero-posterior (AP) views are made in the supine position. A good technician will notice a scoliosis in a patient and will always take the lateral view with the convexity of the scoliosis nearest to the film, so that the divergent beam will tend to demonstrate the disc spaces without overlap of vertebral margins. Oblique views are required to demonstrate the intervertebral facets and it is important to know what convention the technician follows in the use of markers. In some institutions, it is customary to use a marker indicating the side of the patient which is nearest the film in all projections; in the case of AP oblique lumbar spine views with the left side down, it is the right sacroiliac joint which is demonstrated. Custom varies across the country, but in many departments all lumbar spine views are taken with the patient lying down. A good case can be made out for taking views with the patient erect, but in a limited controlled series which was studied in

England it was very questionable whether any abnormality was demonstrated in erect views which was not evident in the horizontal views. Technicians say that positioning is more difficult in the erect position, but this is probably not true and may be due to lack of familiarity with the technique. The use of cones or collimators is essential if films of good quality are to be produced. It should not be necessary to emphasize that any x-ray film must be fully and carefully examined. In the case of lateral views of the lumbar spine, it is nearly always necessary to use a bright light to visualize the spinous processes satisfactorily if the film is to show good detail of the vertebral bodies.

In most patients it is possible to assess the condition of the sacroiliac joints if the AP view of the lumbar spine is centred so as to include the joints, and it is not usually necessary to take oblique views as a routine. Further views can be taken later if any indication for them is seen on the AP view. We have to remember that the gonad dose of radiation is high in these examinations, and exposure of the gonads should be kept to the minimum consistent with an adequate examination for which there are good indications.

PRESENT SERIES

The figures in our series of 316 examinations have been broken down under two main headings: indications for examination and main findings of examination. These figures are intended to serve merely as an illustration; and for that reason they have not been broken down further to include details of age or sex, and follow-up examinations of individuals during the three-month period have been eliminated. It was possible to review the films of 302 of these cases; the remaining 14 were not available for one reason or another.

The indications as taken from the consultation forms fall into nine broad groups. Incidentally, it is recommended that all consultation forms should be preserved. It is refreshing and sometimes educational if the radiologist, when being criticized for his interpretation after a final diagnosis has been made, is able to point out that the original diagnosis of the clinician was also in error. The nine main groups are as follows:

1. Low back pain	87
2. Osteoarthritis	43
3. Trauma	42
4. No diagnosis given	35
5. Miscellaneous	31
6. Disc protrusion	28
7. Suspected metastases	20
8. Routine before electroshock	9
9. Suspected ankylosing spondylitis	7
10. No record available	14
Total	316

The miscellaneous cases include examinations to confirm the soundness of spinal fusions, the degree of scoliosis in poliomyelitis patients, old gunshot

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†Late Assistant Radiologist, University of Alberta Hospital, Edmonton.

Present address: Radiologist, St. Martha's Hospital, Antigonish, Nova Scotia.

wounds, routine pre-employment examinations and so on.

The findings under the main indications were as follows:

TABLE I.—LOW BACK PAIN

Normal	42
Osteoarthritis	16
Disc degeneration	14
Congenital anomalies	7
Porotic wedging	4
Gallstones	1
Trauma (old)	1
Trauma (recent)	1
Sacroiliac arthritis	1
	87

The diagnosis of disc degeneration was not made unless there was narrowing of the disc space together with lipping and/or sclerosis of the adjacent vertebral bodies. The normal intervertebral disc spaces increase in width at descending levels until the lumbo-sacral disc space, which may be narrower than that between L4 and L5 in about 50% of patients. Narrowing at this level, then, without additional signs is not necessarily indicative of a disc degeneration or protrusion.

Congenital anomalies include sacralization of the fifth lumbar and lumbarization of the first sacral vertebra, the presence of lumbar ribs, spina bifida of the lower lumbar or upper sacral bodies and Schmorl's nodes.

Osteoarthritis (the more accurate term of spondylo-arthritis still sounds pedantic) includes the presence of bony spurs on the vertebral margins, sclerosis of the apophyseal or facet joints, and sclerosis of the upper or lower borders of the vertebral bodies.

TABLE II.—OSTEOARTHRITIS

Lipping	32
Disc degeneration	
L4-5	4
L5-S1	2
Spondylolisthesis	
L4-5	2
L5-S1	2
Osteitis condensans ilii	1
	43

For the purpose of this review no differentiation was made between spondylolysis and spondylolisthesis. The majority of patients with this condition did in fact show mal-alignment of the vertebral bodies. If more routine oblique views had been taken, the diagnosis of spondylolysis might have been made more frequently.

No importance should be attached to the absence of compression fractures of L2 from this small series.

In any hospital you will nearly always find a few individuals who require x-ray films rather than a

TABLE III.—TRAUMA

Negative	21
Body fractures	
L3	5
L1	3
T12	2
L4	1
Transverse process	2
Coccyx	2
Sacrum	1
Disc degeneration	2
Spondylolisthesis	1
Osteoarthritis	1
Congenital	1
	42

radiological consultation. It also seems to be true that it is the more talented and experienced clinicians who never submit a consultation form without an indication of what they are looking for. This courtesy is often of service to the patient even before the examination is made, as a capable x-

TABLE IV.—NO DIAGNOSIS GIVEN

Negative	17
Osteoarthritis	10
Spondylolisthesis	3
Congenital anomalies	3
Paget's disease	1
Disc degeneration	1
	35

ray technician can frequently reduce the number of visits of the patient to the department if she is informed of the clinical problem at the time of the original request.

TABLE V.—MISCELLANEOUS

Negative	6
Spinal fusion	10
Scoliosis	4
Spondylolisthesis	4
Tuberculosis	3
Congenital anomalies	2
Gunshot wound	1
Hæmangioma	1
	31

TABLE VI.—INTERVERTEBRAL DISC LESIONS

Negative	6
Negative with positive myelogram	5
Disc narrowing	
L4-5	9
L5-S1	2
L2-3	1
L3-4	1
Osteoarthritis	2
Spondylolisthesis	1
Congenital anomaly	1
	28

In this group a check was made on all the negative cases so that the sub-heading of negative with positive evidence of disc protrusion on myelography could be made. The total negative group would be 11 if this distinction had not been made.

TABLE VII.—SUSPECTED METASTASES

Negative.....	8
Osteoarthritis.....	5
Metastases.....	4
Disc degeneration.....	1
Porotic wedging.....	1
Congenital anomaly.....	1
	20

It must be emphasized that osteolytic secondary deposits may involve as much as one-third of the vertebral body before there is evidence of their presence on an x-ray film, especially if the lesion is centrally situated. Thus a negative radiograph does not exclude the presence of a metastasis in every case.

TABLE VIII.—ROUTINE BEFORE ELECTROSHOCK THERAPY

Negative.....	3
Porotic wedging.....	2
Osteoarthritis.....	2
Disc degeneration.....	1
Congenital anomaly.....	1
	9

This small subgroup and the next might have been included in the miscellaneous section, except that there is a small but steady flow of patients in each group through the department. The patients with suspected ankylosing spondylitis come to the hospital probably for one of two reasons: (a) because some of them are pensionable through the D.V.A., and (b) because the hospital is one of the decreasing number of centres where deep x-ray therapy for benign conditions may still be obtained in Alberta.

TABLE IX.—SUSPECTED ANKYLOSING SPONDYLITIS

Negative.....	3
Ankylosing spondylitis.....	2
Osteoarthritis.....	1
Congenital anomaly.....	1
	7

DISCUSSION

Out of the 302 cases reviewed we can summarize the findings thus:

Negative.....	106
Osteoarthritis.....	68
Disc degeneration.....	36
Trauma (recent).....	17
Congenital anomalies.....	17
Spondylolisthesis.....	13
Spinal fusion.....	10
Porotic wedging.....	7
Others.....	28
	302

The interesting finding in this small series is the multiplicity of radiological diagnoses made under each main indication for examination. This confirms what is only too well known—that the

diagnosis of the cause of pain in the low back is seldom easy and is often very difficult.

If the 10 cases of spinal fusion are excluded and it is assumed for the sake of argument that the remaining cases justified examination to solve a clinical problem, and if, too, the sweeping assumption may be made for the moment that neither osteoarthritis nor congenital anomalies are of much clinical significance, it is seen that 191 of the 292 examinations did not really help the clinician make a diagnosis for which specific relief could be offered to the patient. Admittedly, in many cases an organic lesion may have been excluded. But 191 of 302 cases is 65% in round figures, and that is a large enough percentage to warrant further consideration.

It has been suggested that in many cases the presence of osteoarthritic lipping is not of clinical significance. This is not an unsupported personal opinion. There have been several papers in the past few years deploring the custom in some industries of rejecting prospective employees whose spine radiographs show spur formation. McRae¹ has emphasized that evidence of disc protrusion and spurring can be found in almost every patient over the age of 40 and that by no means all of the disc protrusions, even when they are posterior, are of clinical significance. Fullenlove and Williams² in an even more recent paper have compared the x-ray findings in 200 symptomatic and 200 asymptomatic patients whose lumbar spines were examined. They concluded that congenital lesions, i.e., spondylolisthesis, ununited facet epiphyses, transitional vertebrae, rudimentary discs, spina bifida occulta, and so on, are not a source of symptoms either in the presence of injury or without it and that the present practice of attributing back symptoms to such lesions by themselves is wrong. Of their asymptomatic cases 34% showed spur formation; only 20% of their symptomatic cases did; 9% of their asymptomatic cases showed narrowed discs with spurs, while 25% of their symptomatic cases showed such changes. It might be mentioned at this point that two of the more striking cases of spondylolisthesis which have been seen at the University of Alberta Hospital (not in the period under review) were incidental findings in doctors' wives. In each of these cases the husband asked us not to mention the findings to the patient as neither had any back pain but each might start complaining if she knew that an abnormality was there. Other authors have claimed that disc narrowing with spur formation is more likely to be of clinical significance if the spurs are directed posteriorly or posterolaterally. When it is remembered that evidence of spurring can be found in nearly every person over 40, it is obvious that there is a trap for the unwary or the careless. It is so easy to appear wise and make a diagnosis of osteoarthritis which in persons over 40 will nearly always be confirmed by radiography. But in fact it is probable that it is only a certificate of age which is being

attached to the patient and not a useful working diagnosis.

It is regretted that space does not permit a lengthy quotation from Brailsford's³ paper on lesions of the intervertebral discs. After making the point that prior to 1934, lumbago and sciatica were given no particular significance except by the individuals immediately concerned (they were treated by the family doctor with rest according to the severity of the attack, and usually complete cure followed the most severe attacks though little besides rest and local heat was applied in treatment), he goes on to say that the publication by Mixter and Barr⁴ of their paper on intervertebral disc protrusion started a devastating avalanche which engulfed the U.S.A., England and the world, since they provided the doctors with a ready answer, "slipped disc", to all who sought an explanation of pain in the back. Nearly every patient considered to have a disc lesion was at first labelled as "backache": now everyone with backache has the label "slipped disc". He continues his paper in his usual provocative style and stresses that it is the patient who should be treated and not the appearances of the radiograph. In passing, he again draws attention to the long latent negative radiographic period between the onset of acute clinical signs and symptoms and the appearance of radiographic signs, the latter being not the cause but the result of the process which produced the clinical findings. It is very tempting to ignore this teaching at times, but it is instructive now and again to review the thick pile of radiographs which have been made over a period of years on some of the elderly D.V.A. patients. Some of these people have gross lipping of their lumbar vertebral bodies and some have relatively minor changes. What is significant is that many of them show remarkably little change over a period of years, which seems to confirm Brailsford's observations that this lipping is the result of the process causing acute symptoms and not the cause. Each insult may produce its bone changes, but in the absence of further trauma these changes become stabilized.

There is one other condition which merits some consideration—osteitis condensans. There was one case in the period under review, but it is not a very rare condition. The changes are usually confined to the iliac element of the sacroiliac joint, but some cases have been reported in which the sacrum also has been involved. Rightly or wrongly, cases involving both sacrum and ilium have been interpreted by us as being secondary to chronic strain, and cases confined to the ilium as a separate condition warranting the name osteitis condensans ilii. There were two papers dealing with this condition in the *British Journal of Radiology* in 1953.^{5,6} While the second was not written as an answer to the first, it is evident that there is a divergence of opinion on etiology, symptomatology, and incidence. The condition is undoubtedly more common in females than in males and occurs more frequently

in parous than nulliparous women. Gillespie and Lloyd-Roberts⁵ point out that there is significant association with disc lesions in the lumbar spine in 62% of their 21 cases. They show that the pathological changes in a biopsy specimen were due to a quantitative increase in the amount of lamellar bone on the surface of trabeculae and on the linings of Haversian canals. There was no qualitative abnormality in the bone tissue. Symptomatology is bizarre—pain is intermittent and in some cases appears in the side opposite to the bone changes. Pain when present is found in the low back, the buttock, or in a sciatic distribution. The exact etiology remains undecided. And once again a proportion of the x-ray changes are incidental findings (6 out of 28 in a series by Hutton⁶).

It should be evident from what has been said that diagnostic radiology is not an infallible means of producing a definite solution to a diagnostic problem involving back pain. It has been seen that spur formation, disc narrowing and vertebral margin sclerosis may be the results of a symptom-producing process and not necessarily by themselves the cause of symptoms. There is reason to believe that many congenital anomalies are not of clinical significance. It is possible for secondary deposits to reach a considerable size before there is radiological evidence of their presence. Many traumatic lesions are confined to ligaments and these soft tissues cannot be shown on plain films. There may be a considerable period of time before secondary bone changes confirm the presence of injury in the past. The significance of such lesions as osteitis condensans ilii is still in dispute.

All this does not mean that patients should not be x-rayed, but it is suggested that negative reports be accepted with some reserve and also that individuals should not lightheartedly be allotted a diagnosis of osteoarthritis as soon as they reach 40 years of age. This field of study confirms what should be obvious: that if radiology produced characteristic diagnostic appearances we should all be radiologists. Unfortunately this is not the case, and the radiologist has to weigh up probabilities just as much as his clinical colleagues. He also has to be aware of his limitations and he must always be willing to acknowledge, and indeed to emphasize, these limitations. His standing with his colleagues will not suffer by so doing.

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RÉSUMÉ

Les lombalgies sont une source de perplexité constante pour le praticien et le radiologiste. Dans les trois premiers mois de 1956 à l'hôpital de l'université d'Alberta, la colonne lombo-sacrée fut l'objet de 316 examens radiologiques.

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SOME CLINICAL ASPECTS OF NICOTINIC ACID THERAPY IN HYPERCHOLESTEROLÆMIA

P. O. O'REILLY, M.B., B.Ch.,*
North Battleford, Sask.

OVER THE PAST YEARS the relationship of lipid metabolism to the problem of atherosclerosis has been the source of intensive research. Nutritional,⁹ dietary¹ and biochemical⁴ studies have established an important relationship between lipid metabolism and the development of arteriosclerosis. In the psychiatric field the problem of arteriosclerosis lead-

to investigate further this lowering property of nicotinic acid on cholesterol level, and (b) to study the clinical effects of prolonged administration of nicotinic acid in two cases.

METHOD

In a previous study⁷ in which three groups were involved, nicotinic acid in a dosage of 3 grams daily over a 6-week period lowered serum cholesterol level by 20.4% in the non-arteriosclerotic group and 18.3% in the arteriosclerotic group. From these two groups 10 patients were selected who showed the greatest drop in cholesterol level. This group consisted of three subjects with a diagnosis of psychosis with cerebral arteriosclerosis. Diagnosis was based on the presence of a chronic

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Total	2580.6	1615.0	2265	1990	1417		
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syndrome, characterized by memory loss, periodic confusion, emotional lability and disorientation. History of a cerebral accident, headaches, dizziness and signs of peripheral arteriosclerosis, arteriosclerotic retinopathy and arteriosclerotic heart disease were taken into account. Their respective ages were 67, 63 and 61 years. The other seven members of the group were non-arteriosclerotic and consisted of six schizophrenics and one mental defective. Their ages ranged from 27 to 56 years with an average of 40.5 years. The average age of the whole group was 47.5 years.

PROCEDURE

At the beginning of the experiment, the fasting total serum cholesterol was determined for each

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subject by the Sperry Schoenheimer method. The group were then given one g. of nicotinic acid by mouth three times daily for three months. One week after and six weeks after the start of the experiment, the serum cholesterol levels were again determined. At the end of the three-month period the nicotinic acid therapy was discontinued for a period of four weeks, at the end of which a serum cholesterol level was again determined for each subject. After this determination, the subjects were again given nicotinic acid, one gram three times daily, for period of four weeks and serum cholesterol levels were again estimated at the one-week and four-week periods. Table I shows the results obtained.

TABLE II.—CRITICAL RATIOS

	B On niacin for 6 weeks	C Off niacin 4 weeks	D On niacin 1 week	E On niacin 4 weeks
A Before niacin (P = <.01)	3.33 (P = <.01)	1.77	1.967 (P = <.10> .05)	4.077 (P = <.01)
B On niacin 6 weeks		3.854 (P = <.01)	(P = <.10> .05)	1.121
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D On niacin 1 week				2.97 (P = <.05> .01)

1. Differences in means of cholesterol estimations from stage A (before niacin) to stages B (on niacin for 6 weeks) and E (on niacin 4 weeks) were significant at the .01 level; from stage A to intermediate stages C and D not significant.

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4. Differences in means of cholesterol estimations from stage D (on niacin 1 week) to stage E (on niacin 4 weeks) were significant at the .05 level.

CASE STUDIES

CASE 1.—A 62-year-old farmer was admitted to a general hospital for the treatment of cardiac failure. He was diagnosed by an internist as a case of arteriosclerotic hypertensive cardiovascular disease with diabetes mellitus. His diabetes was adequately controlled by a diet consisting of 200 g. of carbohydrate, 80 g. of fat, 180 g. of protein and 15 units of protamine zinc insulin daily. His cardiac condition was treated by Digoxin 0.25 mg. four times a day for the first two days and twice a day thereafter and a mercurial diuretic (Salurgan) 2 c.c. every second day. On the third day of admission the patient became psychotic and was referred to the Saskatchewan Hospital, North Battleford, on November 16, 1954.

Physical Examination:

Cardiovascular system.—Heart enlarged to the left. Apex beat diffuse, gallop rhythm and duplication of the second sound. An occasional premature beat. Blood pressure 175/110 mm. Hg, with slight degree of pitting oedema of both legs. **Respiratory system:** Multiple crepitations at both bases. **Eye grounds:** Optic discs normal. Irregular arteries with nipping in several places. **Peripheral vessels:** Generalized arteriosclerosis. **Electrocardiogram:** Left axis deviation.

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Psychiatric examination revealed the patient to be mildly confused with pressure of speech, restlessness and euphoria. He was disoriented as to time and place. He had no insight into his condition and his judgment was impaired. **Diagnosis:** Psychosis associated with arteriosclerosis.

Treatment program.—The cardiac condition was treated by Digoxin 25 mg. tablets—one tablet four times a day for the first two days and one tablet twice a day thereafter, and Salurgan 2 c.c. every second day. Condition improved.

The diabetes mellitus was controlled by the regimen previously prescribed. **Psychiatric treatment.**—The patient was given 1 g. nicotinic acid three times daily, and general care and management. After one week of this treatment he was no longer confused or disoriented and his euphoria had disappeared.

TOTAL SERUM CHOLESTEROL ESTIMATION

The serum cholesterol was determined before and after the taking of nicotinic acid. The estimation was carried out at 9 a.m. (fasting) and followed by a further estimation at 1:30 p.m. on the Monday and Friday of each week. A series of four serum cholesterol estimations were carried out before the start of treatment as a control. Nicotinic acid 1 g. tablets were given at 9:30 a.m., 1:45 p.m. and 4:00 p.m. daily. Investigation extended over a ten-month period from November 16, 1954, to September 12, 1955.

The serum cholesterol estimation as carried out is shown in Fig. 1.

Examination of Fig. 1 shows that from a serum cholesterol reading of 288 mg. % on November 22 (before therapeutic trial) the cholesterol level decreased to 180 mg. % on December 13 on a dosage of 3 g. nicotinic acid a day. The patient's physical and mental condition being improved, nicotinic acid was discontinued on the morning of December 14; serum cholesterol on December 20 before discharge on trial leave was 205 mg. %. The patient returned home on this date, having achieved a social remission, and was able to make a fair adjustment in the community. On May 16, 1955, when he once again became confused, retarded and depressed, hospitalization was again necessary. After 18 days on controlled diet, during which time no change was noted in his mental condition, the serum cholesterol level on June 3 was 305 mg. %. Three g. of nicotinic acid a day was prescribed once again. Having once again achieved a social remission he was discharged on trial leave on June 22. On that day his serum cholesterol level was decreased to 155 mg. %. He was given a maintenance dose of 1 g. nicotinic acid twice a day for an indefinite period. A follow-up study showed that on July 21, 1955, the serum cholesterol level was 198 mg. % and on September 12, 215

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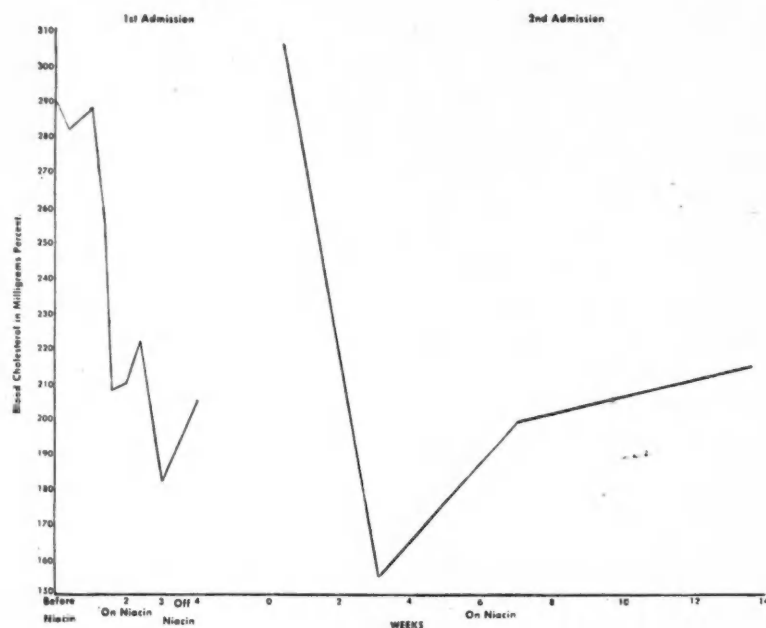


Fig. 1

mg. %. After his discharge from probation, contact was lost with the patient.

ELECTROENCEPHALOGRAM (E.E.G.) INVESTIGATIONS

A series of four E.E.G.'s were taken before and during the treatment period in order to evaluate any effect of nicotinic acid on the electrical pattern of the brain.

Before administration of nicotinic acid, over 50% of the E.E.G. records showed marked slow wave activity at 5 per second, with increased voltage in all areas of the head. When he was on nicotinic acid, the E.E.G. showed a remarkable improvement of the electrical patterns, and the marked slowing was not now evident in the recordings. The electrical patterns were now a stable 10 per second rhythm of moderate voltage in all areas of the head.

Side reactions.—Side reactions consisted of marked flushing and pruritus. These side reactions diminished and had disappeared on the third day of treatment.

Summary of Case 1.

A case of psychosis with cerebral arteriosclerosis was studied over a ten-month period. Administration of 3 g. of nicotinic acid a day resulted in a marked lowering of serum cholesterol level. E.E.G. tracings showed that normalization of the electrical pattern of the brain occurred. From a psychiatric viewpoint, nicotinic acid treatment resulted in a remission of the psychotic features of the case.

CASE 2.—A professional man 55 years old had been diagnosed as a case of essential hypercholesterolaemia. His serum cholesterol reading before treatment was 550 mg. %. He was given a rigid diet and his cholesterol

level fell to 348.2 mg. % over a five-year period. He offered himself as a volunteer for nicotinic acid trials and he underwent a treatment regimen from November 20, 1956, to June 1, 1957, a total of six months.

Physical Examination:

He was slenderly built, height 5' 6". He had a peripheral arteriosclerosis and marked xanthoma of both lower eyelids. Lateral radiographs of the abdominal aorta showed a fairly marked calcification.

Work Tolerance:

He was able to walk only a short distance because he developed intermittent claudication in his lower limbs and fatigue, and was unable to drive in a car any distance as he developed carpo-pedal spasms. This necessitated the employment of a chauffeur for his automobile trips. From a psychological viewpoint this led to irritability, tenseness and anxiety as a reaction formation to his physical illness. He began 1 g. nicotinic acid 3 times a day on November 20, 1956, after investigation of his cholesterol level. Cholesterol levels were estimated on six occasions and the results are demonstrated in Fig. 2.

Results:

Over the six-month period certain beneficial effects of the nicotinic acid therapy were noted. The patient's work tolerance increased markedly. He was now able to walk as much as his work required. The cramps in his lower extremities were markedly decreased. He was also able to drive his car considerable distances without the onset of carpo-pedal spasms. His xanthoma of both lower eyelids showed a decrease in size. There was a marked reduction in anxiety, tension and irritability. This effect may have been due (1) to the effect of the nicotinic acid and (2) to the change in morale of the volunteer. Serial radiographs of the abdominal aorta over the six-month period showed no significant change in the extent of the calcification.

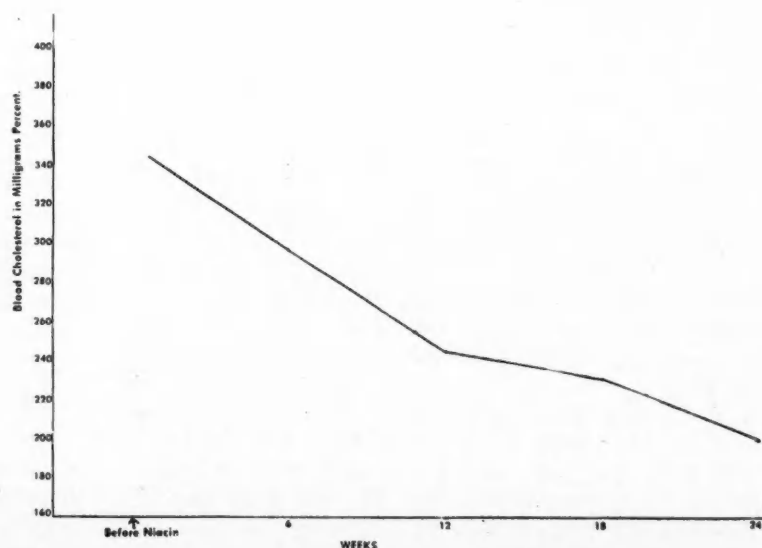


Fig. 2

Side Reactions:

Four weeks after the start of treatment the patient developed extrasystoles; the nicotinic acid was discontinued for four days and the condition cleared up. Resumption of treatment did not cause a recurrence.

Blood Cholesterol Level:

Over the six-month period the blood cholesterol fell markedly from 348.2 mg. % to 200 mg. % on a dosage of three g. of nicotinic acid daily.

Summary of Case 2:

A man with essential hypercholesterolaemia was given 3 g. of nicotinic acid daily over a six-month period. Beneficial effects noted were (1) increased work tolerance, (2) decrease in carpopedal spasm, and (3) lowering of cholesterol level to normal limits.

DISCUSSION

The above findings confirm the serum cholesterol-lowering activity of nicotinic acid. The beneficial clinical effects are demonstrated in the two case studies. It seems pertinent therefore to study the role of nicotinic acid in lipoprotein metabolism. Our knowledge of the specific metabolic function of lipoprotein at the present time is limited. The "clearing" of alimentary lipaemia is attributed by Korn⁵ to the enzyme "lipoprotein lipase" which catalyzes the biochemical reaction involved in the hydrolysis of triglyceride. Korn⁵ has also shown that heparin or a similar compound is actually an intimate part of lipoprotein lipase molecule or complex. The parenteral administration of heparin and a few other compounds causes the enzyme activity to appear quickly in the plasma, where hydrolysis occurs. Preliminary investigations⁶ suggest that nicotinic acid may have an anticoagulant effect. This effect may be due to a release of heparin by the nicotinic acid, thus leading to an increased activity on the part of lipoprotein lipase. This hypothesis would explain the action of nicotinic acid. Nicotinic acid itself on the other hand may have a direct action on the lipoprotein lipase similar to heparin.

SUMMARY

This study confirms the serum cholesterol-lowering activity of nicotinic acid at the 1% level of confidence, i.e., there is only one chance in a hundred that the differences found were not true differences but due to chance. Two case studies are presented showing the effects of nicotinic acid in (a) a case of psychosis with cerebral arteriosclerosis, and (b) in a case of essential hypercholesterolaemia over a prolonged period of time. The possible action of nicotinic acid is briefly discussed.

I wish to thank the following people who co-operated in this study: Dr. A. Hoffer, Director of Psychiatric Research, Saskatoon; Dr. M. Demay, Dr. K. Kotlowski, Dr. Romanowski and R. P. Keogh, R.T. (E.E.G.), of Saskatchewan Hospital, North Battleford. The study was approved by the

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RÉSUMÉ

Le contrôle de l'athérome et partant, de ses complications, semble lié au taux de cholestérol du sang, et parmi les diverses méthodes proposées pour abaisser la cholestérolémie, l'administration d'amide nicotinique semble prometteuse. L'auteur s'est proposé de l'appliquer à trois malades mentaux dont les troubles semblaient relever de l'artériosclérose cérébrale et à sept autres qui ne montraient pas d'atteinte vasculaire. Tous ces sujets reçurent un gramme de vitamine P.P. trois fois par jour pendant trois mois. La thérapie fut interrompue pendant quatre semaines et reprise pendant quatre autres semaines. On observa une chute probante du cholestérol sanguin chez chacun d'eux tant que fut administré ce médicament. Un de ces malades dont l'évolution est rapportée ici dans ses grandes lignes accusa une amélioration sensible au point de vue psychiatrique. Cette amélioration coïncida avec un retour de l'électroencéphalogramme vers la normale. Les faits cliniques d'un autre malade atteint d'hypercholestérolémie essentielle qui s'était soumis à cette cure avec avantage, sont aussi présentés dans le texte.

SELECTION OF THERAPY FOR CESOPHAGEAL CANCER

The treatment of squamous cell carcinoma of the oesophagus by surgical resection and/or 200 to 400 kV. irradiation has not resulted in many five-year survivals. Over half the patients coming to the Toronto General Hospital have been dead in six months and 4 out of 5 died within a year of admission, after such treatment.

The early accomplishments of therapy by the Co⁶⁰ bomb have been encouraging; 41 patients were treated and eight were living a year later, four 2½ years later. Most had at least temporary relief of their difficulty in swallowing. Two of the long-term survivors had surgical resection as well as cobalt therapy.

Treatment of oesophageal carcinoma has been remarkably improved by cobalt therapy and it now seems unjustified to advise radical surgery in any but the most favourable cases. Resection is done only in recent, apparently slow-growing cancers in young patients with no evidence of metastases or extension. When exploration shows fixation or infiltration of the tumour, the operation should be terminated, or only a gastrostomy done. Cobalt irradiation gives a much better chance of improvement. Extensive palliative operations with loops of bowel have only proven worth while in a few cases.

Selecting the best form of treatment for an individual patient is not always easy. Cobalt therapy has its complications: slow results, stricture, perforation. Operative resection has a high risk and doubtful end results. In a few patients, irradiation may well be followed by operation.—R. A. Mustard: *A.M.A. Arch. Surg.*, 75: 674, 1957.

THE VENOUS PRESSURE AND VENOUS PULSE IN THE CLINICAL EXAMINATION OF THE HEART. II. THE VENOUS PULSE*

R. F. P. CRONIN, M.D., M.R.C.P.(Lond.)†

SIGNIFICANCE OF THE VENOUS PULSE

THAT THE VEINS as well as the arteries pulsate in response to the pumping action of the heart was known to the scholars of the eighteenth century. Morgagni¹ refers to venous pulsations, and Hunter² described the venous pulse in the dog. In 1828, Wedemeyer³ inserted a tube filled with fluid into the jugular vein of a horse and observed that it pulsed twice with every heart beat.

Friedreich⁴ in 1886 was the first to attempt graphic recording of the venous pulse; this he did using the cumbersome sphygmomanometer devised by Marey for recording the radial pulse. In the following year, Potain⁵ showed how excellent kymographic tracings of the jugular pulse could be taken by placing a small glass funnel over the pulsating jugular vein and connecting it with a flexible rubber tube to the sphygmomanometer. In this way Potain made simultaneous recordings of the venous pulse, the arterial pulse and the apex beat, and was able to show conclusively for the first time that the jugular pulsations are distinct in timing and wave form from those of the neighbouring carotid artery. He showed the time relations of the jugular pulse to the events of the cardiac cycle but he failed to appreciate the value of observation of the jugular pulse in elucidating disorders of cardiac rhythm. It fell to Wenckebach⁶ in Germany and Mackenzie⁷ in Britain to make this important contribution to the study of heart disease.

Mackenzie⁸ devised a compact machine by which simple records of the venous and arterial pulses could conveniently be made at the bedside. This he called the ink polygraph, an improved version of which he demonstrated at the Toronto meeting of the British Medical Association in 1906. It consisted of a roll of paper driven by a revolving clockwork drum and two ink pens attached to tambours, the latter being connected by rubber tubes to the receiving apparatus. Mackenzie showed the complementary value of the venous pulse in the study of the heart's action, in that the venous pulse reflected atrial activity and the arterial pulse ventricular activity; the venous pulse was associated with the right heart, the arterial with the left. He carried his instrument with him on house calls in his busy practice, and by studying a large number of patients was able to postulate, among other things, the mechanism of premature beats and of atrial fibrillation. In his later years, which witnessed the advent of electrocardiography, he came to decry the use of mechanical recording devices and taught the value of the eye and the finger in the clinical assessment of the patient, with particular reference to the jugular venous pulse, which he summarized in these words: "The venous pulse

gives far more information of what is actually going on within the chambers of the heart. In the venous pulse, we have often the direct means of observing the effects of the systole and diastole of the right auricle, and of the systole and diastole of the right ventricle. The venous pulse, therefore, presents a greater variety of features, and may manifest variations due to disease which the study of the arterial pulse fails to reveal."⁹

With the introduction of the electrocardiogram, advances were rapidly made in cardiology and particularly in the study of cardiac arrhythmias. Lewis,¹⁰ as the pupil and successor of Mackenzie, made the greatest achievements but never failed to underline the importance of the examination and recording of the jugular venous pulse in the examination of the heart. Despite this, the lure of the electrocardiogram proved irresistible, and the venous pulse came to be regarded as a crude substitute for this newer and more refined technique. Scant attention was paid to instructing medical students in the simple practice of examining the neck veins, and recording their observations of the height and character of the venous pulse as part of the routine physical examination; no attempt was made to elucidate an arrhythmia without recourse to the electrocardiogram.

Cardiac catheterization has produced another great increase in understanding of the physiology and pathology of cardiac function. Cardiologists have become familiar with right atrial pressure curves and recognize their value in the diagnosis of affections of the right heart; this has served to focus attention once again on the jugular venous pulse. Chief among the proponents of this viewpoint has been Wood.¹¹

WAVE FORM OF THE NORMAL VENOUS PULSE

Correct analysis of the jugular pulse requires both time and patience. Failure to observe the venous pulse in the neck is usually the fault of the examiner, since it is visible in some 95% of patients;¹² anomalies of the jugular system, extreme obesity and lack of co-operation account for the remaining 5%.

The patient should be lying flat in bed in a good light, preferably a cross-light. The head should be cushioned with a single pillow, and a minute spent encouraging the patient to relax the neck muscles completely. The chin is placed in the midline, or slightly towards the side to be examined, and the skin below the clavicle may be pushed upward, as this tends to slacken the cervical fascia. The three places at which the jugular pulse is most readily visible are shown diagrammatically in Fig. 1; they are the jugular bulb between the two heads of the sternomastoid muscle, the subclavian bulb in the supraclavicular fossa, and the internal jugular vein at the anterior border of the middle third of the sternomastoid. No difficulty should be experienced in distinguishing venous from arterial pulsations in the neck; the latter are quick and monophasic, while the venous pulsations have a deep, welling character and are (usually) biphasic. The upper limit of the venous pulse falls with inspiration, while gentle straining on the part of the patient causes it to rise. I have not found palpation of the venous pulse of help in distinguishing it from the

*From the Department of Medicine, Boston University School of Medicine and the Massachusetts Memorial Hospitals, Boston, Mass.

†Present address: Montreal General Hospital, Montreal, Que.

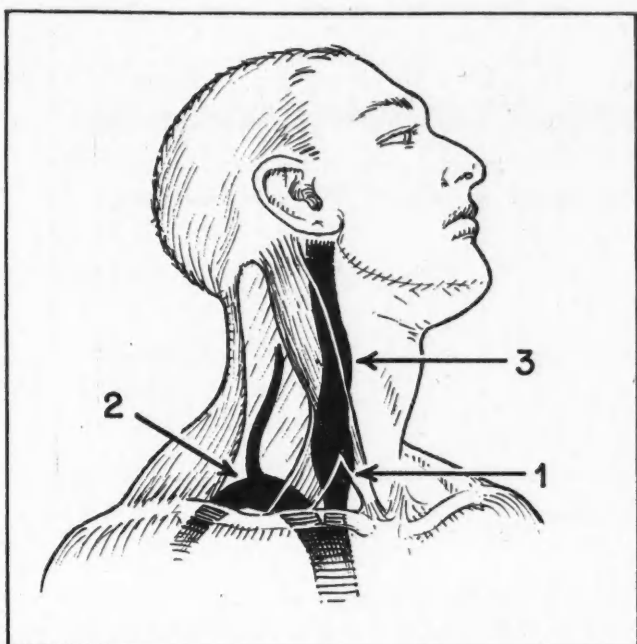


Fig. 1.—Diagram of the jugular venous system. The points at which the jugular venous pulse is most clearly observed are: (1) the jugular bulb, (2) the subclavian bulb, (3) the internal jugular vein at the anterior border of the middle third of the sternomastoid muscle.

carotid, although palpation of the opposite carotid is most useful in timing the venous waves. In patients with an elevated venous pressure, although the jugular system may be frankly distended, it may be necessary to raise the head of the bed in order to bring the pulsating upper limit of the venous column down to a point where its wave form can be studied properly; in cases of very high venous pressure, this may best be done by sitting the patient up at an angle of 90° . In many such patients, the *external* jugular vein is engorged and prominently visible, crossing the posterior tri-

angle of the neck, and it is tempting to use this vein for analyzing the jugular pulse; however, the external jugular pierces the cervical fascia just before it empties into the subclavian, and at this point there is a valve which is usually competent; thus the pulsations in this vein may be misleading and should be disregarded.

Although this paper is not concerned with the graphic registration of the venous pulse, it is necessary to refer to pulse tracings for the purpose of illustration. The externally recorded jugular phlebogram is a poor method of obtaining a venous pulse record; its clinical use lies in the timing of certain events of the cardiac cycle. There is no abnormality of the jugular venous wave form demonstrable by external phlebography which cannot be discerned clinically by an experienced observer.

The external phlebogram is a pressure curve expressing volume changes within the vein, and it cannot be calibrated; furthermore, it is subject to artefact and to arbitrary changes in sensitivity in the recording device, and therefore the pulse tracings should not be taken as comparable one to another; only the wave form as a whole should be studied. It should be noted also that the venous pulse waves travel relatively slowly and that an appreciable time lag (about 0.06 sec.) exists between pulsations emanating from the heart and their appearance in the neck; thus the pulse record appears transposed to the right. The phlebograms illustrated were taken with a small plastic funnel placed over the jugular bulb and connected by flexible rubber tubing to a piezo-electric microphone; this, lead II of the electrocardiogram and a high-frequency phonocardiogram were recorded simultaneously on a Sanborn Tri-Beam Cardiette. Paper speed was 75 mm. per sec., except where noted, and each vertical line represents 0.04 sec.

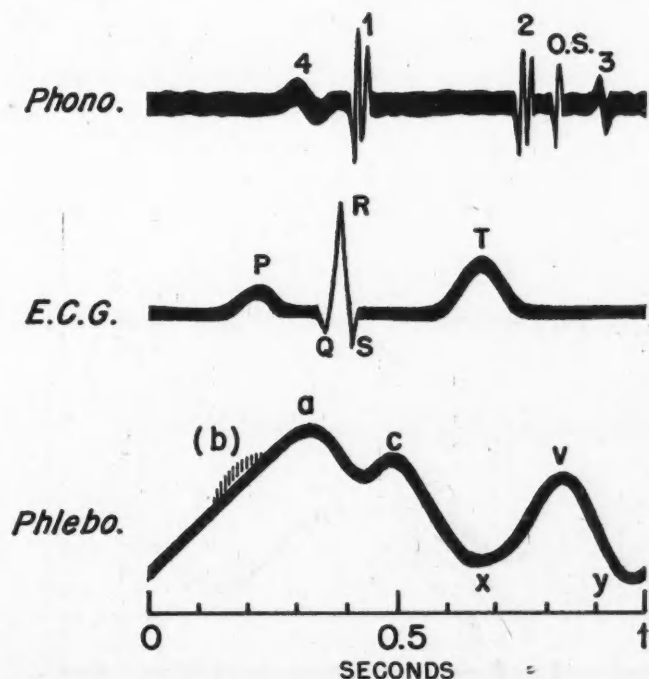


Fig. 2.—Schematic representation of the events of the cardiac cycle. The lower tracing is of the externally recorded jugular phlebogram. For explanation, see text.

The venous pulse has two peaks and two troughs; they are shown schematically in their relation to the electrical and auscultatory events of the cardiac cycle in Fig. 2. The nomenclature is that originally suggested by Mackenzie.¹³ The *a* wave is presystolic in time and synchronous with atrial systole; it is due mainly to regurgitation of blood from the right atrium during its contraction, although the latter portion of the wave may be due to welling up of blood in the veins behind the atrium, closed in systole, as pointed out by Keith.¹⁴ The *x* descent is synchronous with atrial diastole and ventricular systole; it is caused by the inflow of blood to the right atrium from the distended venous reservoirs, which causes a momentary collapse in the jugular pulse. Fredericq¹⁵ ascribed the *x* descent to downward displacement of the tricuspid valve during ventricular systole but it is hard to see how this motion could increase the volume of the great veins, as it must do in order to lower the intraluminal pressure. As the atrium fills, the venous pressure rises again behind the closed tricuspid valve and the veins begin to engorge once more, forming the ascending limb of the *v* wave.

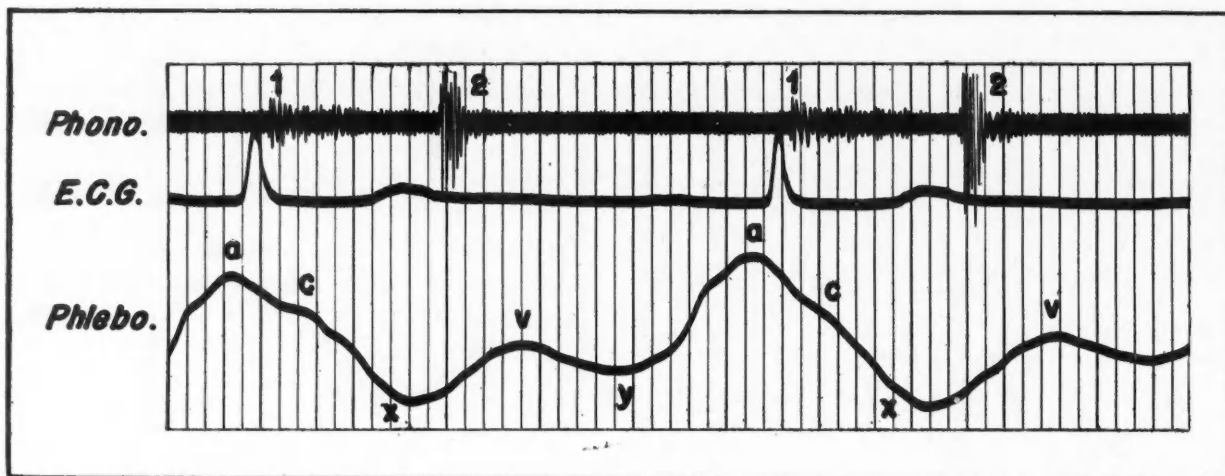


Fig. 3.—The external jugular phlebogram recorded simultaneously with lead 2 of the electrocardiogram and a high frequency phonocardiogram taken at the lower left sternal border. Normal female aged 41 years.

The peak of the *v* wave marks the opening of the tricuspid valve and the commencement of ventricular filling. The *y* descent represents the second venous collapse that occurs during the phase of passive ventricular filling, as the blood accumulated in the atrium during ventricular systole flows into the ventricle, and blood from the great veins enters to take its place.

The *c* wave which disturbs the descending limb of the *a* wave in the externally recorded jugular phlebogram is not usually visible to the naked eye when the pulse is observed clinically, but its origin has given rise to a good deal of controversy. Mackenzie⁷ believed it was an artefact produced by transmission of the arterial pulse wave from the carotid, and named it the *c* wave on this account. Morrow¹⁶ disputed Mackenzie's theory and sought to explain the *c* wave on the basis of an earlier theory of Potain, that it was due to the bellying-back of the tricuspid valve during ventricular systole. In this work, which he carried out at McGill University, he showed that the *c* wave did not disappear from the jugular pulse of dogs when the carotid artery was extirpated. Wiggers,¹⁷ however, showed that the

situation in the dog was not analogous to man, since in the dog the *c* wave was caused by arterial impact upon the intrathoracic veins, probably from the aorta. Wood¹¹ has shown recently that the *c* wave is absent from the right atrial pressure pulse of normal patients when it is undoubtedly present in the external jugular phlebogram, and this would seem to give credence to Mackenzie's theory.

Mention should be made of a positive wave which occasionally disturbs the ascending limb of the *y* trough. This wave was described independently in 1907 by Hirschfelder¹⁸ as the *h* wave and by Gibson¹⁹ (more modestly) as the *b* wave, in patients with severe myocardial disease, a slow rate and gallop rhythm. Hirschfelder ascribed it to momentary arrest of venous inflow consequent on "floating up" of the tricuspid valve leaflets, and Eyster²⁰ correlated the wave with the accessory sound of the protodiastolic gallop. However, the physiological third heart sound occurs just prior to the trough of the *y* descent (Eddleman²¹) and it would appear that this accessory wave is due to atonic relaxation of the ventricle which allows uneven filling and gives rise both to the sound and to the wave.

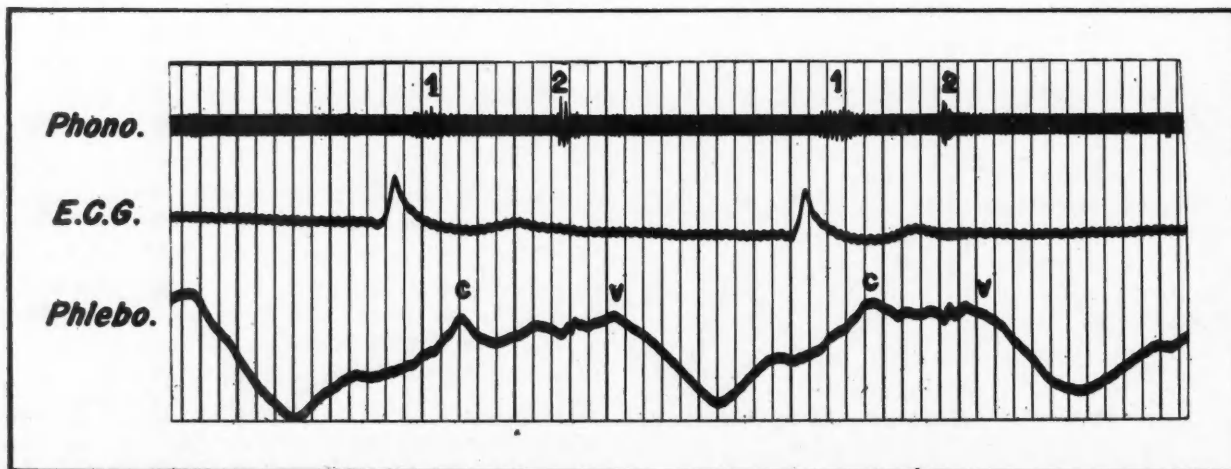


Fig. 4.—Atrial fibrillation; note the absence of *a* wave and *x* descent leaving an essentially monophasic venous pulse interrupted by the transmitted *c* wave. Male aged 48 years with thyrotoxicosis.

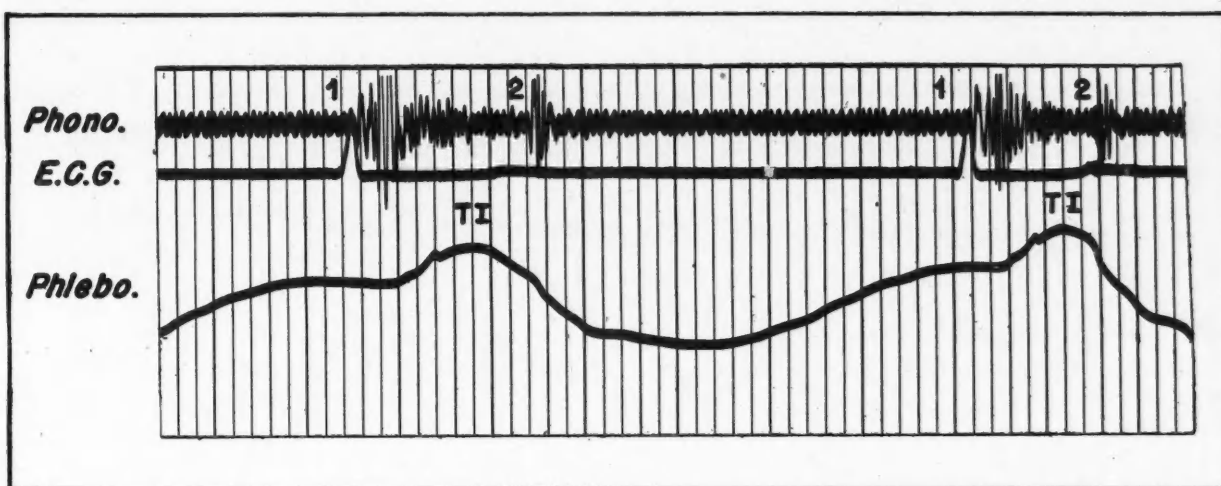


Fig. 5.—Tricuspid incompetence. The *a* and *v* waves are replaced by a single systolic (TI) wave which has its peak in mid-systole. Female aged 72 with atrial fibrillation and advanced right heart failure.

ABNORMALITIES OF THE VENOUS WAVE FORM DUE TO ARRHYTHMIA

No attempt can be made to discuss the abnormal jugular venous pulse without first drawing attention to Wood's masterly description of this subject,¹¹ to which the reader is earnestly referred and to which very little can be added.

As observed clinically, the jugular venous pulse has a simple biphasic wave form with the *a* wave dominant; that is to say, of slightly greater amplitude. No difficulty should be experienced in ascertaining which wave is the *a* wave, if the opposite carotid is simultaneously palpated; the *a* wave can be observed to occur just before the carotid impulse, i.e. it is presystolic.

Of the disturbances in cardiac rhythm clinically recognizable by examination of the jugular pulse, one of the earliest studied was atrial fibrillation. In 1902, Mackenzie⁷ ascribed irregularity of the arterial pulse and the monophasic venous pulse to paralysis of the atrium. Mackenzie described the venous pulse in atrial fibrillation as "ventricularized". This term is unfortunate since it suggests that the single venous pulse wave is confined within

the limits of ventricular systole, which is not so; with the *a* wave and the *x* descent lacking, the venous pulse presents a slow rise culminating in the *v* peak and ending in a normal *y* descent (Fig. 4). In other words, the positive wave is prolonged past ventricular systole, actually having its peak in early diastole, a point which is of paramount importance in distinguishing the positive waves of tricuspid incompetence which are truly systolic in timing (Fig. 5). Thus the venous pulse in atrial fibrillation is irregular, monophasic and with absent *a* waves.

Although the occurrence of supraventricular and ventricular premature beats was suspected by Wenckebach, they were first demonstrated graphically by Mackenzie²² when he published his early venous pulse tracings in 1894. Atrial premature beats give rise to a premature *a* wave in the venous pulse (Fig. 6); however, since the premature *a* wave may occur synchronously with the *v* wave of the preceding cycle, it is distinguished clinically by the absence of a cannon wave. Premature beats of nodal or ventricular origin occurring in sinus rhythm always give rise to a venous cannon wave in the neck unless the premature beat is inter-

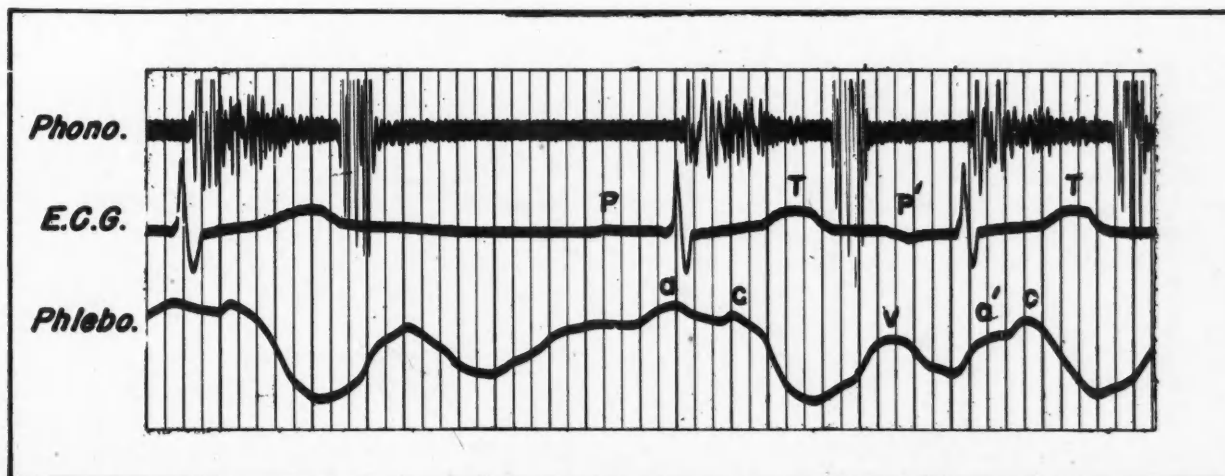


Fig. 6.—Atrial premature beat. The coupling interval is long enough to allow the premature *a'* wave to be seen separately from the preceding *v* wave. Male aged 13 with mitral insufficiency.

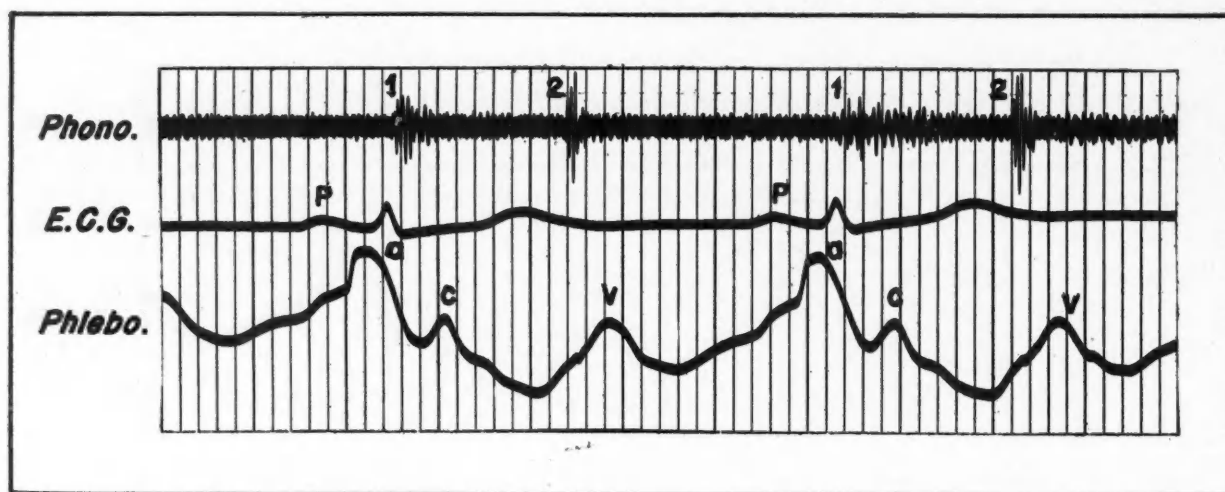


Fig. 7.—Giant *a* waves in a male aged 41 with Fallot's tetralogy.

olated. The cannon wave is easily recognized as a sharp, flicking wave which rises much higher in the neck than the previously observed pulse waves; it is due to the contraction of the right atrium against the tricuspid valve already closed by the simultaneously occurring ventricular systole. These cannon waves are often erroneously interpreted by the casual observer as being of arterial origin, but simultaneous palpations of the arterial pulse will show that, on the contrary, they sometimes occur when no arterial beat is palpable, i.e. when the ventricular extrasystole fails to open the aortic valve.

In atrial flutter, the venous pulse is not especially helpful, particularly when a low degree of AV block and a rapid ventricular response are present. However, when this arrhythmia is suspected, carotid sinus massage may produce abrupt increase in AV block with ventricular slowing, and clinical confirmation can be obtained from the venous pulse as the *a* waves are rendered visible as a rapid oscillation of the venous pulse in the interval between the *v* waves.

First-degree AV block may be diagnosable clinically by noting the abnormal delay between the

venous *a* wave observed on one side of the neck and the carotid impulse palpable on the other side. This delay corresponds graphically to the *a*-*c* interval of the phlebogram and the P-R interval of the electrocardiogram. When Wenckebach's periods are present, progressively lengthening *a*-*c* intervals are apparent, culminating in an *a* wave which is not followed either by a palpable arterial beat or a visible *v* wave. Complete AV dissociation with asynchronous activity of atria and ventricles shows a typical venous wave form of independently occurring *a* waves and periodically recurring cannon waves (Fig. 8). This was first noted by Stokes,²³ who ascribed the lesser waves to "imperfect contractions of the heart".

In nodal rhythm, where retrograde atrial excitation is taking place, regularly recurring cannon waves are seen, since the right atrium repeatedly contracts against a closed tricuspid valve. This may be confused with regularly recurring *giant a* waves, but here again careful timing will show the cannon waves to be systolic, while the latter are presystolic.

In paroxysmal atrial tachycardia, the rate is usually too rapid to permit analysis of the venous wave form, and jugular phlebograms rarely show any

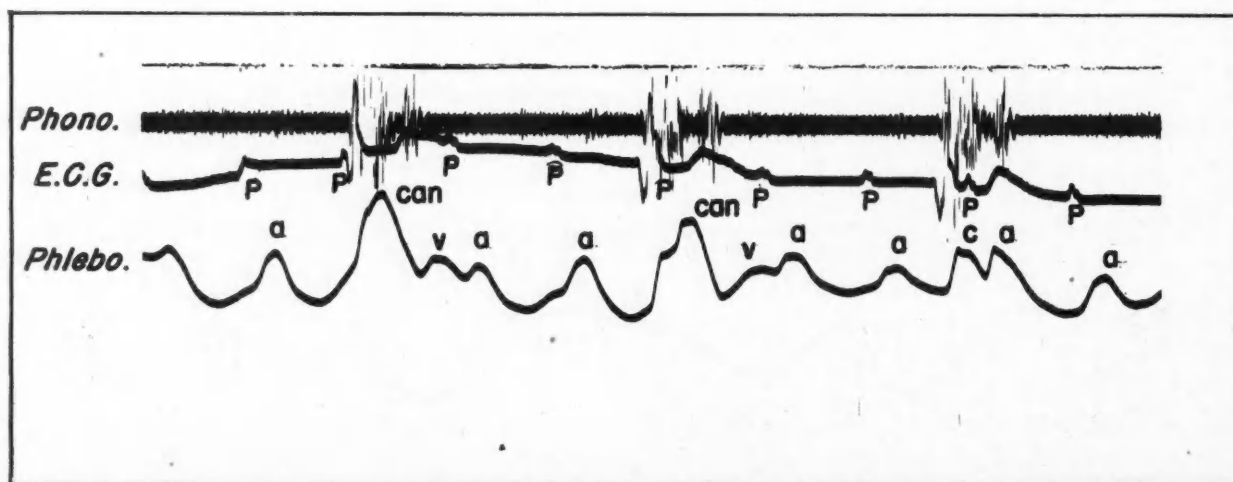


Fig. 8.—Cannon waves. Male aged 72 with complete AV dissociation and Adams-Stokes attacks. Note the independently occurring *a* waves; a cannon wave appears whenever the P wave of the E.C.G. falls within the QRS complex (paper speed 25 mm./sec.).

pathognomonic features in this arrhythmia. Reliance must therefore be placed on other clinical signs, such as abrupt termination or complete unresponsiveness to carotid sinus massage, and on distinguishing the more important ventricular variety. In ventricular tachycardia, when retrograde AV block exists and the atria are not fibrillating, Gallavardin²⁴ showed that a clinical diagnosis could be established by observing jugular venous pulsations occurring at a slower rate independent of the arterial pulse. Prinzmetal²⁵ has described a case in which the standard electrocardiogram failed to show evidence of atrial activity but where *a* waves were clearly discernible in the neck veins, demonstrating independent atrial activity at a slower rate.

MORPHOLOGICAL ABNORMALITIES OF VENOUS WAVE FORM

In addition to the clinical value of examination of the venous wave form in elucidation of cardiac arrhythmias, the venous pulse may show morphological abnormalities of assistance in diagnosis of certain organic heart diseases.

The most easily recognized of these abnormalities is the presence of the so-called *giant a* waves. Giant *a* waves should rise in the neck at least 4 cm. above the *v* wave and can often be observed shooting all the way up from the clavicle to the ear lobe with the patient in the upright position. They are rapid, bounding waves but have not quite the flicking quality of cannon waves; as has been pointed out previously, they are distinguished from cannon waves solely by timing them in relation to the arterial pulse (Vesell²⁶). Giant *a* waves are seen when an actively functioning right atrium encounters difficulty in discharging its contents to the right ventricle, thus producing reflux of blood into the venous reservoirs. Giant *a* waves are seen in tricuspid stenosis, as originally pointed out by Mackenzie, but are not pathognomonic of this condition and are not, of course, seen except where sinus rhythm prevails. Gibson²⁷ has shown that a slow *y* descent is more characteristic of tricuspid stenosis and is present also in atrial fibrillation. Since the peak of the *v* wave corresponds to tricuspid opening, the slowed *y* descent logically reflects obstructed inflow to the right ventricle. Giant *a* waves are also seen in pulmonic stenosis, with and without septal defect, and in pulmonary hypertension, either primary (Fig. 8) or secondary to mitral valve diseases; according to Wood,¹¹ they are uncommon in the pulmonary hypertension of Eisenmenger's syndrome. Giant *a* waves may also occur transiently in right ventricular failure from any cause.

Distinct from both giant *a* waves and cannon waves are the positive systolic waves or TI waves of tricuspid incompetence. According to McMichael,²⁸ this systolic venous pulsation in the neck was first observed in 1836 by Benson²⁹ in an autopsy proven case of tricuspid incompetence. The systolic waves of tricuspid incompetence are deep,

slow, welling waves in contrast to the brisk pulsation of cannon waves. They are not *a* waves, but as has been beautifully shown by Korner,³⁰ they represent the merging of both *a* and *v* waves with the obliteration of the *x* trough, so that whether sinus rhythm or atrial fibrillation is present, the venous pulse presents a slow, sustained, monophasic wave form. White³¹ has remarked on its frequent confusion, clinically, with the carotid pulse, but careful observation while feeling the carotid pulse reveals that, although the TI waves commence in systole, they are prolonged into diastole (Fig. 5) and furthermore they can be eliminated by gentle pressure at the root of the neck. In the normal jugular pulse, the *a* wave is dominant. Reinhold³² has shown that in atrial septal defect the *v* wave becomes decidedly dominant and he cites this as a clinically recognizable sign. Wood,¹¹ on the other hand, finds no pathognomonic features in the jugular pulse in this condition.

For completeness, a rare anomaly of the venous pulse should be mentioned; this is the occurrence of giant *c* waves. These waves are truly systolic, are the dominant wave in the cycle and are virtually impossible to distinguish from regularly recurring cannon waves. Powerful *c* waves have been reported by Herrmann³³ in cases of rupture of the posterior sinus of Valsalva into the right atrium. This causes the arterial wave to enter the venous pulse, giving a true giant *c* wave.

Finally, the characteristic slow *y* descent of the venous pulse in tricuspid stenosis has already been mentioned. In constrictive pericarditis, the *y* descent is abnormally deep and abrupt, the venous pulse collapsing sharply in early diastole. Mounsey³⁴ has shown how the abrupt *y* descent synchronizes with the early diastolic sound heard on auscultation and with the diastolic dip observed in the right ventricular pressure curve. They all appear to be occasioned by the sudden, atonic relaxation of the right ventricular musculature against the supportive splint of a rigid pericardium.

SUMMARY

The significance of the venous pulse is described from an historical aspect. The wave form of the normal venous pulse is analyzed in terms of the events of the cardiac cycle, and the various abnormal venous wave forms clinically recognizable at the bedside are discussed with the aid of pulse tracings. An attempt is made to show the value of the clinical observation of the venous pulse in the physical examination of the heart.

I am indebted to Prof. John McMichael, F.R.S., whose teaching inspired these papers, and to Dr. Gerald Whipple for advice and assistance in taking the pulse tracings.

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BEE STING ALLERGY AND DESENSITIZATION: A REPORT OF CASES AND REVIEW OF THE LITERATURE*

FRANK W. SCHOFIELD, D.V.Sc.(Tor.),
D.V.M.(München),† Guelph, Ont.

CANADIAN medical literature contains little of note with regard to bee sting allergy, while in most medical textbooks the condition is either ignored entirely or at best receives inadequate attention. The inevitable result is that many practitioners, probably the majority, are poorly informed on the subject of allergy as related to insect stings. True, the condition might almost be considered as an occupational hazard of bee-keepers, and therefore so rare as hardly to warrant serious attention. During the last 40 years, among my own acquaintances, two have died suddenly after one or more bee stings. In all probability both of these deaths could have been prevented. While fatalities are rare, both severe and mild allergic reactions are common, especially among apiarists and members of their families. Hypersensitiveness to the stings of other insects, such as wasps, yellow-jackets and hornets, is not uncommon, and may have serious consequences.

REVIEW OF THE LITERATURE

The severe and occasionally fatal reactions which may follow insect stings were, until a few years ago, usually attributed to the accidental injection of the venom directly into a vein, instead of into the subcutaneous tissue. This view was first questioned by Waterhouse,¹ who noted a close similarity between the severe reaction due to bee stings and anaphylactic shock. Braun,² also believing the acute reactions to be allergic phenomena, attempted the desensitization of

a patient by injections of a non-specific protein solution. This failed, but success followed the use of an extract prepared from the terminal segment of the bee's body. Finally Jex-Blake³ presented good reasons for refuting the theory of venipuncture, which for some time had been viewed with increasing scepticism.

Gibb,⁴ influenced by those who believed that the severe reactions were due to the accidental introduction of pollen along with the venom, described a case of severe allergic reaction which he attributed to contamination of the stinger of the bee with pollen. The pollen theory was completely refuted by the skilful researches of Benson and Semenov,⁵ who demonstrated that the lancet of the bee when protruded from its sheath in the act of stinging is free from contamination with pollen. These workers, following closely on the lead given by Braun,² were the first to incriminate bee body protein as the cause of the allergy. They based their conclusions on specific sensitivity tests and satisfactory desensitization with serial inoculations of bee body protein. Fischer⁶ described a case of unusual sensitivity. The handling of clothes which had been in contact with bees was sufficient to induce an asthmatic attack. The patient was successfully desensitized with bee body extract. Mueller and Hill⁷ reported successful desensitization in children hypersensitive to wasps and bees. The article includes a schedule of dosage of bee protein for immunization which has been found both safe and effective. A valuable and comprehensive article by Perlman⁸ describes seven cases of insect allergy. The benefit of desensitization was clearly demonstrated when one of the patients was accidentally stung during the course of the treatment. The reaction which followed was mild in comparison with the severe symptoms manifested prior to desensitization. A discussion of non-specific therapy, of value in combating the acute allergic reaction, is included. Schenken, Tamisiea and Winter⁹ enumerate the most important autopsy findings in bee sting allergy as follows: pulmonary emphysema and oedema; cerebral oedema and intraventricular hæmorrhage; fatty metamorphosis of liver; dilation of heart; visceral congestion; congestion of nasal sinuses and fluid blood. Mueller¹⁰ reports severe generalized reactions as occurring in highly sensitive patients during routine skin testing, and warns that the initial dilution employed in such patients should not exceed 1:100,000,000.

*All treatments were given by qualified medical practitioners.
†Ontario Veterinary College, Guelph.

SYMPTOMS

As might be expected, there is marked variation in symptoms corresponding to the degree of sensitivity. A few instances of delayed reaction have been reported, but in the majority of cases the reaction follows rapidly upon the infliction of the sting. Almost all patients have a history of repeated bee stings with reactions becoming progressively severe. The mild reaction is characterized by difficult or asthmatic breathing which may be accompanied by flushing of the skin of the face, neck or other parts of the body. Pruritus may affect the eyes, hands, feet, and the site of the sting. In hypersensitive patients the symptoms appear suddenly and are those of anaphylactic shock. There is a feeling of constriction in the throat and chest; asthmatic breathing; cyanosis; severe urticaria; dizziness; difficulty in maintaining balance; vomiting; involuntary movements of bowel and bladder; and loss of consciousness. In the female there may be a 'bearing down' feeling, suggestive of uterine contractions. In one unusually sensitive patient a single sting caused a fatal reaction in less than five minutes. Another hypersensitive patient reported swelling of the skin of the forehead followed by desquamation, in addition to the usual severe symptoms.

DESENSITIZATION (IMMUNIZATION)

Although the term "desensitization" is commonly used to describe the treatment of allergic patients with carefully calculated doses of the specific allergin, the desired goal is more than a transient loss of hypersensitivity. A degree of immunity sufficient to protect against the allergic agent (bee protein) must be established and maintained until the hypersensitivity has permanently disappeared or diminished to a level of comparative safety.

Dosage of bee body extract.—Because of marked variation in individual sensitivity, no fixed table of dosage can be followed. The strength of the initial dose, which is the most important, is determined by the information obtained from the clinical history and the skin sensitivity tests. One must keep in mind the fact that the skin test is not as reliable a guide as the severity of the reaction following a sting. Mueller¹⁰ advocates an initial dose of 1 in 100,000,000 for all patients who have experienced a severe reaction to a single sting. As a general rule, in the high dilutions the dose may be increased about 50% at intervals of three to five days. Should even a slight constitutional reaction follow, the schedule of dosage must be changed. A good general rule is to repeat, or reduce if necessary, any dose which provokes a reaction; increase it only in the absence of reaction.

Patients working with bees, and receiving stings at frequent intervals without severe reactions, may postpone treatment until the season is over.

Maintenance dosage.—When the maximum dose for a patient has been reached, the immunity

acquired may be maintained by repeating the dose at intervals of three or four weeks. (All dosage will depend upon the strength of the bee-body extract used.)

Duration of immunity (desensitization).—This important point is often difficult to determine. The degree of sensitivity will usually be indicated by the reaction to the following: skin sensitivity tests; an environment contaminated by bee protein; a provocative dose of bee body extract; or a bee sting. In one patient, an apiarist, the immunity acquired from frequent stings during the summer months was partially lost during the winter. Inoculations given before the beginning of the "honey season" prevented the unpleasant reactions experienced from the first few stings.

Cross-Sensitivity and Cross-Immunity.—The results of recent investigations confirm the view that specific immune reactions among the closely related species of the order *Hymenoptera* are inconstant. There is apparently no highly specific antigen common to the group. Variability rather than constancy characterizes the reactions. Mueller¹⁰ states, "As for cross-reactions and specific sensitivity, we have found all manner of variations." Benson reported five out of seven bee-sensitive patients as also sensitive to wasp extract. Under certain circumstances it is necessary to use polyvalent antigen for immunizing.

THE PREPARATION OF BEE BODY EXTRACT*

The extract used in desensitization is prepared in the following manner. Ten grams of freshly killed bees are rinsed in alcohol and then in water to remove adherent pollen, and ground to a thick paste with pestle and mortar. The trituration must be thorough. The extracting agent (Na_2CO_3 1.0 g. + NaCl 0.89 g. + H_2O (dist.) 100 c.c.) is added in small quantities, with continuous grinding. The whole mixture is placed in a refrigerator for 24 hours. The turbid fluid is filtered through paper of medium porosity, and phenol added to give a .05% concentration. Sterility tests must be made later. This preparation is the "stock solution" from which are made all necessary dilutions for skin testing and treatment. At the present time standardized extracts prepared from bees and other stinging insects may be obtained from some of the manufacturers of biological products.

REPORT OF CASES

CASE 1, G.T.—This case is reported in some detail because it illustrates the difficulties encountered by the early investigators in this field. Seventeen years ago (1940), when the patient came under observation, the limited literature dealing with bee sting allergy was unknown to the writer. The patient, an amateur bee-keeper, was at the time studying apiculture with the intention of becoming either a commercial or a professional apiarist engaged in teaching and research. The increasing frequency of asthmatic attacks experienced when working with bees, as well as the increased severity of the reaction to bee stings, constituted a

*Body of bee contains approximately 12% protein.

serious threat to any such career. We were at first suspicious of both pollens and venom as likely allergens, overlooking the possibility of bee protein.

The elimination of pollen. A slightly alkaline extract of finely ground bees was prepared after thorough washing in several changes of alcohol followed by water. Skin scratch sensitivity tests were made in serial dilutions. Within a few minutes typical allergic reactions appeared. Thus with pollen eliminated we proceeded to eliminate the alternative—venom.

The elimination of venom. The same technique was employed in the preparation of the following extracts, designated 'H' and 'T' or 'heads' and 'tails'. Extract 'H' was prepared from the head and thorax, while extract 'T' was prepared from the terminal segments of the abdomen and was therefore rich in venom. We were surprised to discover no significant difference in the reactions which followed routine skin testing with these extracts. The whole procedure was repeated with identical results. It was thus evident that the allergen was neither venom nor pollen but some component of the body tissues of the bee.

Serial dilution skin tests, using the bee body extract already described, gave a slight reaction at 1:1000 dilution. A schedule of dosage was outlined based upon both clinical history and skin sensitivity. The initial dose was 0.1 c.c. of 1:10,000 dilution of the 10% bee-body extract. No severe reactions were recorded during the course of treatment. The final dose was 0.1 c.c. of the 10% extract. The result was unexpectedly good. After immunization the patient received numerous stings—on one occasion more than fifty in a single day—yet the reaction was mild and transient. Maintenance doses were given for approximately two years. The patient instead of abandoning his career is today a professor of apiculture. Direct contact with bees is rare at the present time, and the occasional sting causes no reaction.

CASE 2, L.E.—The patient, the son of an apiarist, worked in the apiary during the summer. His mother was very allergic to bee sting, and one aunt was slightly hypersensitive. He had become increasingly allergic, and according to the physician's report "one bee sting results in generalized urticaria, and oedema of the eyelids and face, accompanied by acute asthma".

In 1953 immunizing treatments were given commencing with 0.05 c.c. of a 1:10,000 dilution of bee-body extract and terminating with 0.5 c.c. of a 1:10 dilution. In 1954 six pre-seasonal injections were given at intervals of one week. The patient was stung a number of times during the season, with a maximum of eight stings in one day. No general and only mild local reactions occurred. In 1955, six pre-seasonal injections were given as before. During the season the maximum number of stings received in one day was 15. A slight reaction followed. Medicinal treatment was not necessary. Although the patient was immune, skin sensitivity remained. In 1956 pre-seasonal treatment was again given. A maximum of five stings were received in one day, with no reaction. He has decided to continue the pre-seasonal treatments, influenced by mild reactions which followed a few unusually early stings.

CASE 3, F.B.—The patient, the wife of an apiarist, had never worked among the bees, but over a period of years had received a few stings. The reaction following each sting had become increasingly severe, necessi-

tating medicinal treatment. Severe asthmatic attacks resulting from exposure to honeycomb or bee-keeping equipment of any kind were of frequent occurrence. Skin sensitivity test 1:1000 was positive. A series of graduated doses of bee-body extract commencing with 0.05 c.c. of a 1:100,000 dilution were given during 1953, but no records are available. Weekly injections of the extract in increasing potency were given from February to October during 1954. After the injections transient asthma occurred on three occasions during the months of February and March. On May 12 the patient was stung by a bee, causing a severe general reaction. During June, July and August she was free from asthma. In September and October there were four attacks of asthma of short duration. On October 5, she received the final injection in the series, 0.5 c.c. of a 1:10 dilution of bee-body extract, which was the maximum dose tolerated. From the beginning of November 1954 until March 7, 1955, she was entirely free from asthma. On this date a bee flying into the room caused an asthmatic attack.

On March 19, 1955, skin scratch sensitivity tests were as follows: 1:1000 negative; 1:500 negative; 1:100 positive. The attacks of asthma, which before the specific immunizing treatments had been frequent and severe, were now (1955) infrequent and mild. Both the physician and the patient reported highly gratifying results. On April 19, 1956, the patient received one bee sting and died with symptoms of acute shock within a few minutes.

Comment: A satisfactory report on this case has not been received. The last injection was October 5, 1954.

CASE 4, W.R.—This apiarist had suffered for some time from mild attacks of asthma when working with bees, handling bee-keeper's equipment or extracting honey. A single sting would cause a severe attack of asthma which was sometimes accompanied by a rash on the neck.

Skin sensitivity 'scratch' test negative at a dilution of 1:10,000; slight reaction 1:5000; and positive reaction 1:1000. Bee-body extract was given, starting with 0.1 c.c. of a 1:10,000 dilution and finishing the series with 0.5 c.c. of a 1:10 dilution of the 'stock' 10% bee-body extract. No severe local or general reactions were reported.

The patient received only one complete series of injections in 1955, after which he moved to another locality. He reports marked improvement during 1955 and 1956. He was able to work with the bees and extract honey with no ill-effects. On one occasion he was stung eight times in a single day, which resulted in an attack of asthma and a rash. Two or three stings in a day are usually harmless.

CASE 5, K.Y.—This patient had suffered for many years from severe reactions following the bites of black flies and deer flies. The sting of a hornet or wasp caused local swelling only, which disappeared in a day or two. On July 5, 1954, she was stung on the back of the neck by an insect, either a wasp or a hornet. The following is a quotation from her own excellent description of the reaction which she experienced.

"I ran into the house, found my eyes would not focus; I was dizzy and felt queer from head to toe. I stumbled across the garden to my neighbour, told her what had happened, then lay down on the couch and began to vomit. I now lost control of my bowels, and

was all the time fighting to get my breath and remain conscious. I rolled off the couch on to the floor, and a few minutes later 'blacked out.' When I came to, I began to shake and the chills continued for three-quarters of an hour. I was taken by ambulance to the hospital; it was at least two hours after the sting when I arrived. My face was swollen, and red patches appeared under the skin on my forehead. My hands and feet were swollen and remained so for more than a week."

On October 5, 1954, skin scratch sensitivity tests were made using bee-body extract. (Hornet and wasp extract was not available.) The results indicated a low degree of sensitivity: 1:500 gave a slight reaction and 1:100 also a slight reaction; 1:50 was strongly positive.

Immunizing treatment was unsatisfactory because of uncertainty as to the species of insect which had stung the patient; the great irregularity in the administration of the injections; and the use of bee-body extract in immunizing against some other insect species.

Commencing in October 1954 with an injection of 0.05 c.c. of a 1:10,000 dilution the patient had received 40 injections by January 1956. The series was still incomplete because of numerous repeat doses necessitated by her failure to comply with the correct injection intervals.

In August 1956, she was stung by what she believed to be a wasp. The reaction was mild. In about an hour a wheal formed surrounded by a zone of congestion and later a rash which persisted for one week and was very itchy. There is no proof of desensitization, as the insect which inflicted the sting was not identified.

DISCUSSION

In presenting these case reports of bee-sting allergy and the specific treatment employed in desensitization (immunization), we realize the presence of certain defects which detract from their value. Yet in spite of this, the efficacy of the method employed is demonstrated in three of the five cases. Our results are in general agreement with those of others who have followed a similar technique. A bee-body extract, standardized by exact chemical methods, which is now available,* is obviously a great improvement on the crude extract which we prepared and used. Another disadvantage was that in most instances the patients lived at a distance and were not seen personally, with the result that all the necessary data were not available.

Emphasis must be placed upon the fact that the treatment is not a simple process of true desensitization, but rather an attempt to build up and maintain a degree of immunity sufficient to protect against what might otherwise be a dangerous allergic reaction.

In Case 3, it is impossible to state whether the fatal outcome could have been prevented by continuing the treatments. The asthmatic attacks had decreased in both frequency and severity. Such extremely sensitive patients should be provided with adrenaline (epinephrine) or other medicinal agents, which may be used immediately in case of necessity.

*Hollister-Stier Laboratories, Spokane, Wash., or Cutter Laboratories, San Francisco, U.S.A.

Where the identity of the stinging insect is uncertain and cannot be determined by skin sensitivity tests, as in Case 5, a polyvalent antigen should be used when possible.

Patient L.E. (Case 2), while receiving pre-seasonal inoculations of high concentration, reported the following unusual and disturbing experience. He had been stung by a bee with the usual slight reaction, compared with the severe reaction experienced prior to immunization. Forty-eight hours later he was given, by the doctor, the necessary inoculation of approximately 0.25 c.c. of a dilution of 1:10 bee-body extract. Six hours after the treatment he was stung again by a bee and had a reaction of unusual severity. He naturally questioned the efficacy of the treatment but continued the latter for three years, and no such reaction has occurred since. It is possible that the first sting combined with the immunizing dose had resulted in a temporary depletion of antibody—a negative phase—from which the body tissues had not recovered when assaulted so unexpectedly by the second bee sting.

In closing this discussion we wish to draw attention to an important practical point known to most bee-keepers, but not to many of the profession or laity. When the honey-bee stings, because of the presence of barbs on the stinger, the latter cannot be withdrawn, but remains in the flesh together with the poison sacks. The involuntary muscles of the venom sacks continue by rhythmic contractions to inject the venom into the tissue. The stinger and glands should be removed as soon as possible, with a careful brushing-off or scraping-off movement. If they are grasped between the fingers and pulled out, the venom may be easily forced into the tissue.

SUMMARY

A concise summary of the important contributions to the literature of bee sting allergy is presented, with a description of the preparation and use of a bee-body extract, illustrated by case reports and discussion.

I wish to record my appreciation of the help so generously given by G. A. Townsend, Professor of Apiculture, Ontario Agriculture College, Guelph, and also to thank Mrs. Gladstone Brown for her thoroughness and care in the preparation of the bee-body extracts.

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RÉSUMÉ

Les piqûres d'abeilles peuvent être mortelles. Ces mortalités sans doute causées par une manifestation idiosyncrasique d'hypersensibilité sont rares; par contre, les inconvénients assez graves qui résultent souvent de cette hypersensibilité dans les piqûres non mortelles pourraient

être évités. L'expérience a démontré que les sujets sont sensibles aux protéines du corps de l'abeille. C'est ainsi que l'on a déjà noté des crises d'asthme causées par des poussières sur des vêtements souillés par les abeilles. La désensibilisation dans ces cas a fait ses preuves. Les manifestations d'hypersensibilité la plupart du temps suivent de près la piqure. Ces symptômes consistent en un serrement de poitrine ou de gorge, une respiration asthmatique, de la cyanose, de l'urticaire souvent généralisée, des étourdissements, des vomissements, de l'incontinence et de la hypothyrmie. La dose initiale du traitement de désensibilisation est difficile à déterminer et la cutiréaction n'offre que peu de renseignements. Lorsqu'un niveau d'immunité satisfaisant est atteint, il doit être maintenu par des injections de rappel aux trois ou quatre semaines; cette dose de rappel varie d'après les sujets et aussi d'après la concentration en

protéine de l'extrait d'abeille employé. L'immunité croisée n'est pas toujours présente entre les abeilles et les guêpes, les frelons, mouches à chevreuil et autres insectes piqueurs, de sorte qu'un antigène polyvalent s'impose dans certaines circonstances. Le corps de l'abeille contient environ 12% de protéine. La méthode d'en préparer un extrait est décrite dans le texte. Certaines firmes de produits pharmaceutiques préparent maintenant pour le commerce un extrait dosé. Fait important mais souvent ignoré des profanes, le dard de l'insecte et son sac à venin restent souvent attachés à la peau. Il importe de les en déloger le plus tôt possible après la piqure mais en prenant bien garde de ne pas comprimer le réservoir, ce qui n'aurait pour effet que d'injecter une plus forte dose de venin dans les tissus. L'auteur fournit plusieurs exemples cliniques fort intéressants de sensibilité aux abeilles.

Case Reports

ARSENICAL KERATOSES ASSOCIATED WITH CARCINOMAS OF THE INTERNAL ORGANS*

M. ROSSET, M.D.(Paris), F.R.C.P.(C.),
Toronto

DERMATOLOGISTS have been aware for many years of the possibility of epitheliomas arising in the skin of patients with keratoses after industrial exposure to, or (more often) the medicinal use of arsenic. Sir Jonathan Hutchinson was the first to report cases of carcinoma of the skin in psoriatic patients treated with Fowler's solution. Since then, similar cases have become so common that they are not considered worth reporting, and dermatologists are always looking for evidence of early malignancy in patients with arsenical keratoses.

Cases of visceral cancer following ingestion of, or exposure to, arsenic have been rare, and definite evidence of arsenic being the direct cause of carcinoma in internal organs has never been presented. Haagensen⁹ stated that no carcinoma of internal organs had been found in persons with arsenical carcinoma of the skin; Schwartz and Tulipan²⁰ made the same statement in their textbook on occupational diseases of the skin. Sommers and McManus reported 27 cases of arsenical carcinoma of the skin; of the 6 patients autopsied, 4 had separate additional internal cancers, three of multiple sites. They also tabulated 18 cases previously reported of visceral cancer following the use of arsenic (male: 14 cases and female: 4 cases). The purpose of this paper is to present two additional cases and to review the recent literature on this subject.

Not all forms of arsenic appear to be equally carcinogenic, and the trivalent inorganic compounds are commonly accepted as the most frequent etiologic factor. In cases of occupational origin, the following are most commonly met: arsenic trioxide used as insecticide, rat poison, weed killer, sheep dip and hide preservative; copper acetoarsenite, lead arsenate, and calcium arsenate used as insecticides; copper arsenite used as a pigment in making wallpapers and paints. In addition, exposure to arsine (hydrogen arsenide) may occur in ore smelting, electroplating, the manufacture of brass, dyeing and gold extraction.

The most common medicinal preparations containing arsenic are: Fowler's solution (potassium arsenite), Donovan's solution (arsenious and mercuric iodides), Asiatic pills (arsenic trioxide and black pepper), de Valagin's solution (liquor arsenii chloridi) and sodium cacodylate for hypodermic use. In addition one must mention the arsenophenamines, mapharsen and neoarsphenamine, rarely employed at present in the treatment of syphilis, as well as acetarsone, tryparsamide and carbarsone, which are all pentavalent organic compounds.

Other possible sources of exposure to arsenic are: cigarette smoke, city smoke, vegetables or fruit grown in fields where crops have been sprayed with lead arsenate for many years; wine and water in certain areas.

Dosage and period of administration of arsenic: In most cases it is impossible to assess the amount of arsenic taken. Many patients with psoriasis have been taking Fowler's solution over long periods (more than 30 years in some cases), having their prescriptions filled in different places and not remembering how long the intervals (if any) were between different courses. There are also some cases in which a very short period of ingestion of small doses (a few months) was sufficient for the development of malignancy after a long latent interval which seems to be the rule in the carcinogenic action of arsenic. In one case a quantity of only 0.19 g. of As_2O_3 was given, whereas another person

*From the Department of Medicine (Dermatology), St. Joseph's Hospital, Toronto.
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received in all about 70 g. and one 121 g. It is impossible to estimate the amount of arsenic inhaled or accidentally ingested in occupational exposure (as this may happen directly in the isolation of the element, its manufacture or exposure to dust or fumes of other substances containing arsenic as a contaminant).

Excretion of arsenic is slow and is done by the skin, sweat glands, urine, faeces and milk. It is in the skin and its appendages that arsenic is said to be deposited for a long time after ingestion. In a case of chronic arsenic poisoning, Underhill¹⁸ found the highest concentration of arsenious oxide in the liver, followed by stomach (tissue), intestines, kidneys, spinal cord, lungs, brain, spleen and pancreas. In the living, arsenic can be chemically estimated in the urine, hair, nails, spinal fluid, blood and samples of skin. However, small quantities of arsenic can be found in the normal human body, varying with its water and food content and also with the occupation of the person. Histochemical methods are probably a more reliable way of demonstrating the presence or absence of arsenic, although some paradoxical findings have been reported by very reliable observers.

The clinical appearance of the skin is quite characteristic. The palms, fingers and soles show varying numbers of small hard and dry hyperkeratotic horns, moderately elevated. The skin surface is uneven, and superficial ulcers or fissures may be present. In many cases a more or less generalized pigmentation, giving the skin a "raindrop" appearance, is associated with the keratoses. These lesions are so characteristic that all dermatologists will accept them as evidence of chronic arsenical poisoning, even if the patient denies ingestion of, or exposure to, arsenic.

CASE 1. C. B., male, 51, gravel pit superintendent. Admitted to St. Joseph's Hospital on September 20, 1954, with the following history: he was in fairly good health, living an active outdoor life, until about three months before admission when he noticed undue fatigue which persisted and progressed slowly. About one month before admission a dull constant ache in the right side of the chest appeared, aggravated by breathing. He also gave a history, without many details, of chronic liver disease over a period of 3-4 years, for which he was said to have been refused life insurance. He had been taking Fowler's solution for psoriasis, off and on, for approximately 20 years.

He was a well-developed male. The liver was enlarged 3 cm. below the costal margin; it was firm and somewhat irregular; the spleen tip was palpable. The right lower lateral chest was tender and breath sounds at the right base were grossly decreased. There were patches of psoriasis in the scalp and on the dorsa of the hands; the palms and soles showed multiple keratoses. The relevant laboratory findings on admission were: sedimentation rate 41 mm. in one hour, cephalin cholesterol flocculation (CCF) test: trace. Serum proteins 6.25 g. with albumin 3.1 and globulin 3.15 g. %. Radiographs of abdomen and chest, intravenous pyelograms and bronchoscopic examination were negative.

During his stay in hospital the patient developed ascites, and his temperature oscillated between 98° and 102°F. Repeated laboratory work showed: serum proteins 4.85 g. with albumin 2.6 and globulin 2.25 g. %, CCF 1+, alkaline phosphatase 21.2 units and bromsulphalein 46.8%, of dye retained. The ascites fluid contained 0.75 g. % of total proteins and 2.15 g. % on repeat examination; it was negative for cancer cells. Despite supportive therapy, the patient went downhill gradually and died on December 11, 1954.

Postmortem examination revealed cirrhosis of the liver with a primary tumour of this organ, first thought to be a hepatoma and then on review of the slides an anaplastic cholangioma or haemangioendothelioma. There were plastic peritonitis, ascites, secondary carcinoma of the retroperitoneal lymph nodes, bilateral hydrothorax, oedema of lungs, coronary sclerosis and perisplenitis. The pathologist in his conclusion stated: "Interesting is the fact that the tumour arose in a cirrhotic liver and the patient showed evidence of chronic arsenical poisoning."

CASE 2. R. H., male, 38, service station attendant. First seen in the office in February 1955, with the history of a small ulcer of one year's duration on the right fourth finger. The lesion seemed to be increasing in size very slowly, despite the use of different ointments. On examination, there was an irregular (8 mm. x 4 mm.) shallow ulcerated area on the inner aspect of the right 4th finger. Both palms and all the fingers showed multiple keratoses with a few similar lesions present on the soles. The trunk and limbs presented irregular patches of brown pigmentation. The patient at that time denied ingestion of or exposure to arsenic in any form. At a later date and under further questioning, he remembered that in his adolescence he used to work on a farm and had to use lead arsenate to spray potatoes. He also stated that the keratotic lesions on his palms started appearing in his teens.

A biopsy taken from the affected finger showed a squamous cell carcinoma, grade one. The lesion was removed by electrodesiccation and curettage, and treatment was completed by a series of superficial x-ray treatments. The ulcer healed well and the patient's general condition was excellent. Pubic hair sent to the Division of Industrial Hygiene of the Ontario Department of Health was reported as showing less than 0.5 p.p.m. of arsenic.

In January 1956, this man was seen again with a history of a slightly tender lump in the right axilla which had appeared two weeks previously. Examination showed enlarged freely movable nodes in both axillae and groins; as the patient was leaving for British Columbia the same week, he was told to seek medical advice on arrival there. The history obtained from him later was that he felt well till early April 1956 when he developed "stomach flu" with marked abdominal pains and anorexia. At that time a very large lump was noticed in the right armpit. He was thoroughly investigated in Vancouver, B.C., and according to him was told that he had cancer and could not be treated. He returned to Toronto early in May, complaining of pain in the abdomen, later localized to the right lower quadrant and right flank, constipation, anorexia and loss of weight. He was admitted to hospital on May 7, 1956, and examination on admission revealed a hard irregular mass (size of an orange) attached to the medial wall of the right axilla and continuous with a

mass extending to the chest wall. The patient was jaundiced and the liver enlarged 5 finger's-breadths below the costal margin; it was firm and non-tender. There were enlarged, firm and mobile inguinal nodes. Laboratory investigation showed: serum proteins, 5.3 g. %, with albumin 3.19 and globulin 1.4, van den Bergh: 1.5 mg. Urinalysis: bile +++++, urobilin +++++, albumin: trace. A needle biopsy of the axillary mass showed only necrosis in a lymph node. Palliative radiotherapy was given to the node in the right axilla but only very little regression took place. The patient became gradually cachectic, went downhill and died three weeks after admission.

Postmortem examination showed secondary carcinoma of the liver, lungs, adrenals, gall-bladder, common bile duct, pectoral muscle and abdominal, thoracic, axillary and cervical lymph nodes. The primary appeared to be in the head of the pancreas; microscopically the tumour appeared to be very anaplastic with a slight tendency to acinar formation. The site of the original carcinoma of the skin was well healed.

DISCUSSION

In the above two cases, as in all cases reported previously, one cannot exclude the possibility of a merely coincidental chronic arsenical poisoning and the development of carcinomas. However, the carcinogenic properties of arsenic have been recognized for a long time, although experiments with it have produced only a few skin and other cancers in animals. Bungeler (cited by Sommers and McMannus) concluded that arsenic given in small doses for long periods produced a general neoplastic tendency, so that cancers would arise in foci of regeneration following nonspecific injuries. Warburg²¹ mentions arsenious acid as a strong specific chemical agent which may produce cancer through a respiration-inhibiting effect on the cells. This action is described as very slow, irreversible and occurring with small doses rather than with a single large dose, where there is always the chance that the cells will be killed rather than that they will become carcinomatous. There is some evidence that exposure to dust of arsenic and radioactive materials has been associated with a higher incidence of pulmonary cancer than occurs in the general population. A survey, made in England and published in 1948, of the incidence of cancer in workers exposed to inorganic compounds of arsenic showed a proportional and significant excess of death attributed to cancer compared with three other occupational groups living in the same area. The deaths among the former included 29% attributed to cancer and among the latter 13%; when subdivided by the site of growth, the figures suggested that arsenic workers were specially affected in the lungs and skin. Cases of carcinoma of the lung in sheep dip workers have been reported (sheep dip is a compound of arsenite of soda and free arsenious acid). According to Satterlee,¹⁹ between 1932 and 1951 there was a rise of more than 300% in the arsenic content of American tobacco cigarettes; this coincided with an increase, in the United States, in the death rate from carcinoma of

the lung of 200% in women and 600% in men. As for other organs, many cases of acute and chronic liver damage due to arsenic have been reported. In 1950, Franklin, Bean and Hardin⁶ reported four cases of portal cirrhosis and arsenical dermatitis following prolonged use of Fowler's solution. Only one patient had abnormal results of liver function tests; in one case the diagnosis was confirmed by liver biopsy and in another by postmortem examination. Other observers reported a very high arsenic content in biopsies of tumour tissues from patients with uterine cancer.

All these findings, reported by authors in different parts of the world and tending to incriminate arsenic as a possible causative factor of carcinoma in different organs, are quite disturbing. Although proof of direct relationship is still lacking in many cases, all the reports, statistics and arguments are too impressive to be dismissed as a simple coincidence. One cannot help thinking (for argument's sake) of the consequences of administration of Fowler's solution for treatment of psoriasis in a man who already may have been exposed to arsenic in his occupation, combined with heavy smoking and ingestion of arsenic from vegetables, fruit, or wine.

The editors²² of the 1950 *Year Book of Dermatology and Syphilology*, commenting on the side effects of administration of arsenic, stated:

"the editors are of the opinion that the use of inorganic arsenic in the form of Fowler's solution by mouth or sodium arsenate by injections, etc., is justified in selected patients who suffer from 'innocent' dermatoses, among them dermatitis herpetiformis, lichen planus, psoriasis, chronic discoid and lichenoid dermatosis and even in exceptional cases of acne. Dermatologists, in years of observation on a total of thousands of cases, have demonstrated that judicious use of arsenic in such selected cases is a relatively safe procedure which can often give relief from otherwise intractable itching or unremediable and insupportable disfigurement. Therapeutic use of arsenic is warranted only if the physician is properly acquainted with the limits of safety of dosage and early signs of intolerance beyond which one may not go unless the severity of the disease justifies such a step."

In reviewing the literature, one notes that in some cases only very minute doses of arsenic have been administered, well within what is considered to be limits of safety. In other cases, signs of arsenical intoxication have not appeared until many years after the medication has been discontinued and the patients were probably out of sight of their attending physician. One also cannot ignore the case of patients (so common in dermatological practice) who wander from one specialist to another, forgetting to mention previous arsenical medication or trying to mislead their doctors when questioned about it.

Taking into account all these factors, one should think very carefully whether any non-fatal disease (however chronic and disturbing it might be to the

patient) is worth the risk of remote serious and even fatal complications from treatment. I personally find the risk is not worth taking and refuse to prescribe arsenic for my patients, although some ask for it, in view of their previous good results with this medication.

In relation to the two cases reported here, there is another point I would like to stress. It has been the practice of dermatologists to follow up cases of arsenical keratoses routinely to detect signs of cutaneous malignancy. In view of the possibility of internal carcinoma or liver damage, I believe that internists should also follow up these patients regularly with liver function tests, chest films, and gastro-intestinal series. Even if only an occasional case of cirrhosis or early carcinoma is detected, the trouble would be worth taking. It may also lead to discovery of more cases, unreported or never coming to autopsy, and bring forward more evidence of the carcinogenic action of arsenic. Here is one more field for common work between dermatologists and internists.

SUMMARY

The recent literature on arsenical keratoses and visceral carcinomas is reviewed.

Two cases of arsenical keratoses, associated: (a) with cirrhosis and a primary carcinoma of the liver, and (b) with a primary carcinoma of the head of the pancreas, are reported.

The evidence for the carcinogenic properties of arsenic¹³ is reviewed.

The advisability of discontinuing the therapeutic use of arsenic is discussed.

The need for cooperation between dermatologists and internists is stressed in investigating the possibility of visceral malignancies in patients showing cutaneous signs of chronic arsenical poisoning.

I wish to thank Drs. Wm. F. Jones and F. M. Lively for allowing me to report their cases.

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APLASTIC ANÆMIA ASSOCIATED WITH THYMOMA REPORT OF TWO CASES*

PAUL GREEN, B.A., M.D., F.R.C.S.[C.],
Winnipeg, Man.

CASE 1.—Mrs. M.V. had reached her 70th year without any noteworthy illness. Two weeks after the death of her husband in March 1951, she developed a non-productive irritating cough, vague chest pains, weakness and dyspnoea. Two weeks after the onset of these symptoms she consulted her physician. Physical examination at this time disclosed pallor, and some scattered rhonchi in all lung fields, but little else of note. No lymph nodes were palpable nor were any viscera. Hæmoglobin value was 8.4 g. %, white cell count 11,700. An x-ray film of her chest disclosed a round opacity in the right upper mediastinum. A tentative diagnosis of lymphoma was made and she was referred to radiotherapy. Daily local radiation of 200r had been given for five treatments when it was noted that she had petechiæ scattered over her arms and legs. Repeat blood examination at this time disclosed a Hb value of 8.4 g. %, white cell count 8000, and platelets 28,000. She was admitted to the St. Boniface General Hospital on April 24, 1951. Physical examination at this time did not reveal anything further except a temperature of 101° F., some blood oozing from her gums, and marked general weakness. Hæmoglobin value was now 7.8 g. %, red cell count 2,500,000, white cell count 3100, and 99% of the cells were adult lymphocytes; platelet count was 47,000. She was given chloramphenicol 250 mg. four times daily, and also blood transfusions. Bone marrow aspiration revealed few cellular elements in the aspirate. She continued to manifest profound weakness. By May 4, the transfusions were not keeping up with the blood loss from gums, bowel, and into skin and muscles, and the patient went into shock and died.

Laboratory data are tabulated:

Date	Hæmoglobin	White cells	Platelets
27/4/51.....	7.4 g. %	1900	39,000
30/4/51.....	6.4 g. %	2200	
4/5/51.....	4.1 g. %	1600	13,100

Postmortem.—The spleen was small, weighing 50 grams, and was not histologically remarkable. Plasma cells were present. Bone marrow was fatty and hypoplastic, and microscopic examination showed mainly fat with islands of normal marrow. The mediastinal mass was a firm, round, encapsulated tumour with the appearance of a benign thymoma with lymphocytes and sheets of large epithelium-like cells.

CASE 2.—Mrs. A.T., aged 78, was well until 1947 when she fractured an ankle, which healed uneventfully.

In December 1950, she was found comatose at home and admitted to St. Boniface Hospital, where it was noted that she was profoundly pale; Hb value was 2.0 g. %. She was transfused and improved markedly.

*From the Department of Medicine, St. Boniface Hospital, St. Boniface, Man., and the Clinical Pathology Laboratory, Deer Lodge Hospital, D.V.A., Winnipeg, Man.

Bone marrow aspiration disclosed a poorly cellular aspirate with few erythroid elements; no megaloblasts were seen. She complained of some general weakness, but otherwise admitted no other symptoms. Radiography of chest was negative. She was discharged to the out-patient department.

The patient did not return to the out-patient department for follow-up, but in February 1951 she was again found in a stuporous condition and readmitted. Physical examination this time disclosed a small mass in the right breast which was thought to be a carcinoma, but the patient refused to have surgical treatment of this. She was transfused as before.

A summary of her subsequent laboratory findings is tabulated:

Date	Hæmoglobin	White cells	Other
15/2/51	5.2 g. %	12,500	Occult blood neg. Differential: neutrophils 35%, lymphocytes 62%; monocytes 3%.
22/2/51	5.4 g. %		
27/2/51	4.6 g. %		Transfused
8/3/51	8.0 g. %		
16/3/51	7.8 g. %		
26/3/51	5.2 g. %	11,000	RBC 1.9 million; neutrophils 57%; lymphocytes 42%.
6/4/51	4.2 g. %		Transfused. Repeat bone marrow showed relative scarcity of erythroid cells.
15/4/51	8.0 g. %		Reticulocytes 3%.
14/7/51	9.0 g. %		RBC 2.7 million.
21/8/51	5.0 g. %		Reticulocytes 0.4%.
17/9/51	6.2 g. %		Reticulocytes 0.1%.

Platelet counts were not done but platelets appeared to be adequate on the peripheral blood smears.

In early November 1951 she developed cough, fever, and yellow sputum; the clinical diagnosis was bronchopneumonia. A chest radiograph at this time was not remarkable. Weakness became more marked and she did not appear to rally, although her fever subsided on penicillin therapy. She died on October 10, 1951.

At postmortem an encapsulated mass was found in the anterior mediastinum attached to the pericardium. On section this was found to be a benign thymoma, similar in appearance to that in Case 1. The spleen was normal. Bone marrow was pale and fatty and hypoplastic. A low-grade scirrhous carcinoma of the breast was present. There were no metastases.

DISCUSSION

In addition to the two cases reported above, 16 reports are collected from the literature in which a refractory anæmia was found associated with thymoma. Matras¹ in 1928 reported the case of a 62-year-old woman with three years' duration of anæmia and leukopenia, who was found to have a thymoma post mortem. In 1934 Opsahl² reported a similar experience. In 1935 Radojevic and Hahn³ recorded the case of a 20-year-old man with the same association. Davidsohn's case⁴ in 1941 had red cell aplasia only, with other marrow elements unaffected.

In 1945 Humphreys and Southworth⁵ recorded the history of a 58-year-old woman who had had a

mass demonstrated radiologically in her chest, which was treated ineffectively by radiation. Later she was found to have a profound anæmia, with normal white cell and platelet counts. Removal of the mass, which turned out to be a thymoma, led to remission of her anæmia. However, a year later she developed what appeared to be a septicæmia following a foot infection, and died. At postmortem no recurrence of the tumour was noted.

In 1946 Wintrobe⁶ mentioned the case of a 16-year-old girl with myasthenia gravis and pancytopenia, found at postmortem to have thymic hyperplasia. Chediak⁷ in 1953 recorded the case of a male with anæmia alone and a thymoma, cured by removal of the thymoma.

Others have not been so fortunate after removal of thymomas. Chalmers and Boheimer⁸ reported two cases in 1953 with red cell aplasia which did not respond to ACTH, had a temporary response to thymoma removal and to splenectomy, but then responded to ACTH. They quote an unreported case of Brewer with a similar syndrome, in which operation was refused. Ross *et al.*⁹ also reported two cases with red cell aplasia which did not respond to thymectomy.

Weinbaum¹⁰ in 1955 described a case in which operation was not done; this woman had a mass demonstrated by x-ray and known to be present for some years before she developed red cell aplasia.

In 1956 Martin *et al.*¹¹ reported a refractory anæmia with cyclic neutropenia, this time associated with agammaglobulinæmia and absence of plasma cells from the bone marrow; this patient, who is still alive, was benefited by immune globulin injections. The nature of this mass had not been proven histologically, but its radiological appearance was consistent with a thymoma. Ramos¹² also described a case of anæmia, leukopenia and agammaglobulinæmia with a mediastinal mass which was a spindle-cell thymoma.

Lambie¹³ also records a case of thymoma, pancytopenia and agammaglobulinæmia in which improvement followed thymectomy and splenectomy. The tumour preceded the onset of hæmatological disturbance by some years. Probably the agammaglobulinæmia too was a late development, because this woman had had positive Coombs tests previously. This patient may be the same as one recorded earlier by Ross *et al.*,⁹ and still alive at that time of his report.

This report brings to 18 the number of cases of association of thymic tumours and refractory anæmias (Table I). There may or may not be associated myasthenia gravis; there may or may not be leukopenia and thrombocytopenia; there may or may not be improvement after removal of the thymic tumour and after splenectomy, and with treatment with adrenal steroids. Agammaglobulinæmia may be present. In earlier cases recorded no assay of gamma globulins in the serum was reported, and this assay was not done in the two

TABLE I.

Refer- ence	Sex	Age	Anæmia	Leukopenia	Thrombo- cytopenia	Myasthenia gravis
1	F.	62	x	x	0	0
2	M.	56	x	x	0	x
3	M.	20	x	x	x	0
4	F.	58	x	0	0	0
5	F.	58	x	0	0	0
6	F.	16	x	x	x	x
7	M.	47	x	0	0	0
8	M.	48	x	0	0	x
	F.	62	x	0	0	0
	?	?	x	0	0	?
9	F.	44	x	0	0	0
	F.	45	x	x	x	0
13	same case?	F.44	x	x	x	0
10	F.	76	x	0	0	0
11	F.	63	x	x	0	0
12	M.	77	x	x	0	0
Pres. case	F.	70	x	x	x	?
Pres. case	F.	78	x	0	0	?

cases recorded here. Plasma cells were present in the bone marrow in both of our cases, however, although they were not numerous; as a rule absence of plasma cells is a feature of agammaglobulinæmia.

The question arises as to the relationship between the thymic tumour and the blood dyscrasia.

1. The occurrence may be purely fortuitous. This on chance alone would be a rare association indeed. Possibly therapy given because of the mediastinal mass could be instrumental in producing the blood dyscrasia; the cases of Radojevic,³ Martin,¹¹ and Humphreys⁵ had had x-ray therapy, as did Case 1 reported here. However, the anæmia was present at the time that therapy was initiated. Lambie's case¹³ had had nitrogen mustard therapy. Wintrobe's case⁶ had had therapy for her myasthenia gravis.

2. The thymoma might in some unknown way produce the blood dyscrasia. In some cases the thymoma has been known to antedate the appearance of the blood dyscrasia by some years, on x-ray evidence (for example, the case of Ramos¹² and Case 1 of Ross⁹). This possibility has been discussed by Ross *et al.*⁹ and in an editorial.¹⁵ The rarity with which thymic tumours are associated with blood dyscrasias makes this unlikely. For example, Rowland *et al.*¹⁴ in a review of 180 cases of myasthenia gravis, in which a thymic tumour was associated in about one-third, mentions blood dyscrasia in only one, and this case had been labelled "pernicious anæmia".

It is possible that different forms of thymic tumour might account for failure of the marrow aplasia to appear in many thymomas. However, no consistent histological pattern has been described here: lymphocytic hyperplasia,^{1, 6, 10} spindle-cell types,¹² epithelial types,² and mixed types.^{5, 9, 13} Admittedly classification of thymic tumour is difficult.¹⁶

3. A third possibility is that the same etiological factors are responsible for both thymoma and marrow aplasia.

No evidence at present available strongly supports any of these possibilities. In view of the uncertain relationship between thymoma, aplastic anæmia and agammaglobulinæmia, it is probably

best to bear this possible occurrence in mind and to study further cases as they appear, in order to throw more light on this interesting association.

SUMMARY

Two cases of thymoma associated with aplastic anæmia are reported and 16 other cases tabulated from the literature. The possible interrelationship between these rare diseases is briefly discussed.

ADDENDUM

Since this paper was written, two more cases have been reported (E. D. Bayrd and P. E. Bernitz: *J. A. M. A.*, 163: 723, 1957).

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MYELOGENOUS LEUKÆMIA IN A STILLBORN INFANT

GEORGINA R. HOGG, M.D.* and
OTTO A. SCHMIDT, M.D., F.R.C.S.[C.],
M.R.C.O.G., F.A.C.S.,† Winnipeg, Man.

PROVEN CASES of congenital leukæmia are uncommon. Numerous articles have been published which review the literature written about these cases. Among the more recent are those of Taylor and Geppert¹ and of O'Connor *et al.*² Frequently it is difficult to be certain that leukæmia actually existed at birth, and was actually congenital. Many cases in the older literature are thought now to have been examples of hæmolytic disease of the newborn. It seems unlikely that more than 30 acceptable cases of congenital leukæmia have been reported. Kelsey and Andersen³ mention two cases of leukæmia in stillborn infants collected from the German literature. No recent report of such a case

*Assistant Pathologist, Winnipeg General Hospital, and Lecturer, Department of Pathology, University of Manitoba, Winnipeg.

†Department of Obstetrics and Gynæcology, Winnipeg General Hospital, and Lecturer, Department of Obstetrics and Gynæcology, University of Manitoba.

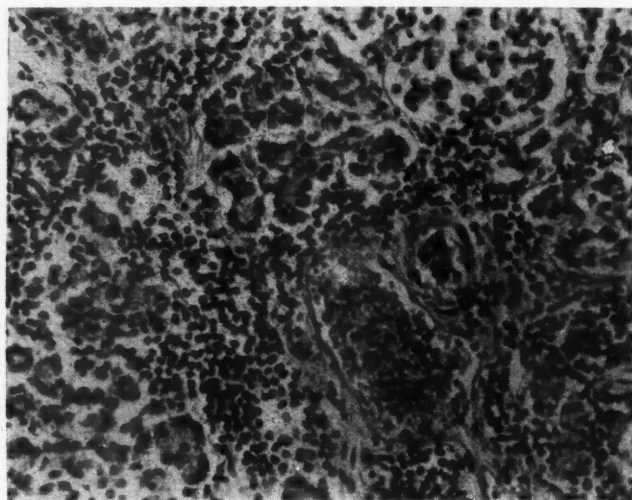


Fig. 1.—Leukæmic infiltrate in the pancreas. An increase of nucleated cells is present within blood vessels. $\times 270$.

has been found. Therefore, the discovery of leukæmia in a stillborn male infant was thought to be sufficiently important to be reported, the more so because this infant had a healthy twin sister.

The mother was a white primigravida aged 25 years, whose pregnancy progressed to term without event. She was Rh positive and Kahn negative. The twin pregnancy was confirmed by radiological examination of the abdomen made on January 28, 1957, 13 days before delivery. This was the only radiation to which the patient was subjected during her pregnancy. Labour was normal and each twin was delivered spontaneously on February 10. The first baby, a female weighing 2160 g., was normal at birth. In the absence of audible heart sounds of the second twin, membranes were ruptured immediately to hasten delivery. This resulted in the loss of a moderate amount of meconium-stained liquor. This twin, a male weighing 3730 g., was stillborn but showed no maceration. The placenta and membranes were expressed within a few minutes, with a normal postpartum blood loss. The placenta were fused, that of the stillborn twin being slightly larger than that of the healthy one. The dimensions of the combined placenta were 19 x 23 x 3 cm., and their

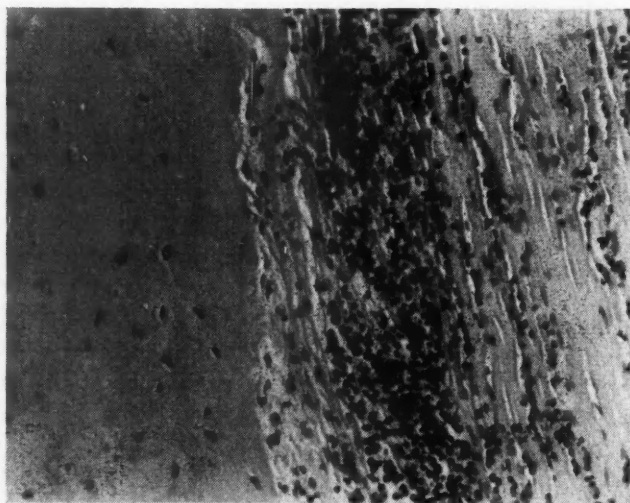


Fig. 2.—Leukæmic infiltrate in fibrous tissue adjacent to femur. $\times 270$.

total weight was 700 g. The membranes of the stillborn twin were stained with meconium.

At autopsy, there was a 0.8 cm. tear in the upper leaf of the tentorium without significant bleeding. Petechiæ were seen in the brain. Pleural and pericardial effusions of clear straw-coloured fluid were present. The lungs were congested and atelectatic. The spleen was enlarged, weighing 27 g. as compared to the 11.0 g. given by Potter⁴ as normal for this body weight. The thymus was slightly reduced to 7.3 g. from the normal 10.8 g. No enlargement of lymph nodes or liver was present.

Microscopically, there was an extreme increase of nucleated cells within blood vessels throughout the viscera. Polymorphonuclear neutrophils were quite easily distinguished among these, and the more immature cells were considered to be predominantly myeloid in type. An infiltrate of these cells was seen in the thymus, myocardium, liver, spleen, adrenals, kidneys, testes and prostate. This type of infiltrate was particularly well seen in the pancreas (Fig. 1) and in the periosteum and parosteal fibrous tissue (Fig. 2).

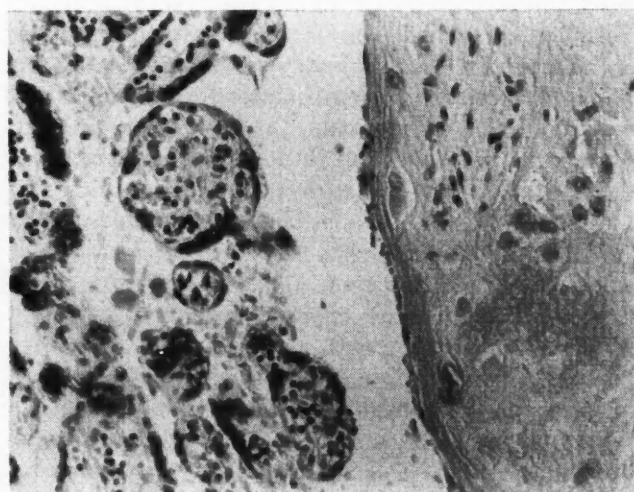


Fig. 3.—Leukæmic cells are present within vessels in chorionic villi of the placenta of the affected twin. The decidual septum between affected and healthy placenta is seen on the right. $\times 270$.

The lymphoid tissue of both thymus and spleen appeared to be somewhat decreased and obscured by the myeloid infiltrate. Microscopic sections taken from the junction of the placenta showed the leukæmic cells to be confined within the vessels of the chorionic villi on one side of the decidual placental septum (Fig. 3), while on the other side the cellular elements of the blood within the chorionic villi appeared normal (Fig. 4).

Approximately three months after the birth of these twin babies, blood samples of the healthy twin and of the mother were examined and found to be normal. The baby was well at five months. There were no known cases of leukæmia in the family.

DISCUSSION

Jones *et al.*⁵ state that most cases of congenital leukæmia have been myelogenous in type. Many of these are characterized by hepatosplenomegaly and purpura. Bernhard *et al.*⁶ have pointed out the association of leukæmia and mongolism. In the

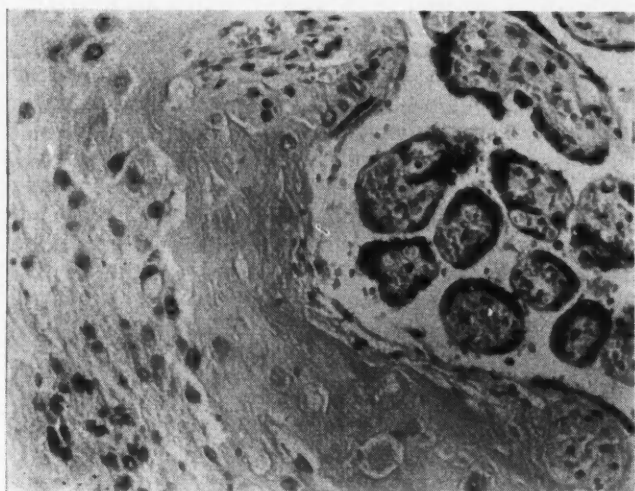


Fig. 4.—Decidual septum is seen on the left and normal chorionic villi on the right. No leukemic cells are present. $\times 270$.

above case of myelogenous leukaemia in a stillborn, the only suggestive gross finding was splenomegaly. The exact mechanism of death is uncertain, but meconium staining of the amniotic sac suggests that severe anoxia was present. The significance of the intracranial changes is hard to assess. The tentorial tear did not result in bleeding, and may have taken place after the death of the fetus. Cerebral petechiae are not uncommon in leukaemia but could equally well be due to anoxia. Stewart *et al.*⁷ suggest that the risk of leukaemia may be greater in children who are exposed to diagnostic x-rays *in utero*. In this case the only radiological examination to which the mother was subjected was an antero-posterior and lateral film of the abdomen 13 days before the birth of the babies. It seems doubtful whether this association is more than incidental.

CONCLUSION

A case report of myelogenous leukaemia in a still-born male infant born at term has been described. The twin sister is alive and well.

This case was one of a series of neonatal deaths being investigated by the Neonatal Mortality Study Group, assisted by a Dominion-Provincial Health Grant.

We also wish to thank Professor J. M. Lederman, Medical College, University of Manitoba, for his helpful interest and advice.

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Special Article

THE TRAINING OF REHABILITATION PERSONNEL*

G. GINGRAS, M.D.,† Montreal

THE PRESENT EMPHASIS on preventive, psychosomatic and rehabilitative medicine, as well as integration with economic and sociological concepts, is well known to the public at large, the medical profession and the physicians who devote their time and energy to physical medicine and rehabilitation. No doubt this specialty may be considered as the typical expression of this modern trend.

Although the medical profession is deeply interested in the scope of the specialty, rehabilitation procedures must be considered as a continuous and composite process where a number of professions, which until recent years have functioned individually within their own sphere, become inter-related into a coordinated and compact program, part of which is common to all rehabilitation devotees.

The training of rehabilitation personnel seems largely a question of organization and coordination. Until now there has been little or no methodical accumulation and assessment of experiences which might help students and teachers alike to adapt their mentality to teamwork in a progressive fashion.

By reason of the imperative need for total rehabilitation services, the medical and allied professions—physical, occupational and speech therapy, psychology, vocational, placement and medical social service—have broadened their field of endeavour. Consequently, an effort must be made to facilitate the teaching of rehabilitation not only in relation to individual disciplines but as a total concept. Of course, the increasing demand for highly specialized personnel, the availability of government grants, and the increasing number of rehabilitation facilities call for the establishment of a program acceptable from the economic and pedagogic points of view. The University of Montreal has laid the foundation for such a training program—the subject of this paper.

In a recent editorial in the *Journal of the Canadian Physiotherapy Association*, Dean MacFarlane emphasized that in Canada "... where teaching in medicine and its related disciplines is in every instance established in a faculty of medicine of a university, it seems reasonable that physical therapists who are destined to a career of working directly and intimately with doctors, should have their educational experiences in the milieu and atmosphere of a faculty of medicine". It is felt that this sound principle applies to physical and occupational therapists as well as, on the postgraduate level, to all members of the para-medical professions who plan to join a rehabilitation team.

*Presented at the Fifth Annual Meeting of the Canadian Association of Physical Medicine and Rehabilitation, held in Toronto, Ont., on June 21 and 22, 1957.

†Medical Director, Rehabilitation Institute of Montreal.



Fig. 1 illustrates the integration of the School of Rehabilitation and of various other schools under the sole jurisdiction of the Faculty of Medicine. The faculty inaugurated a School of Physical and Occupational Therapy in 1954. In 1956, the School was renamed the School of Rehabilitation. The purpose of this change was twofold: to proclaim the importance and recognition of rehabilitation at university level; and to enable the School to integrate other facets of rehabilitation in its curricula.*

The curriculum of the Physical and Occupational Therapy Section of the School of Rehabilitation duplicates that of the University of Toronto. After consideration, the formula of the combined course was also adopted in its entirety. Indeed, this formula appears to offer a solution to the tremendous need for physical and occupational therapists in the Province of Quebec and has a decided advantage in the present geographical distribution of our hospitals and centres. A great number of smaller institutions and community hospitals, particularly in less densely populated areas, will not require separate departments of physical and occupational therapy. Another decisive factor is the fact that plans are now being elaborated to inaugurate rehabilitation centres in every major city or town. Graduates of the combined course have already proven their worth in such centres, and from an administrative point of view, there is no doubt that their versatility will be a great asset in the future.

An important feature of the combined course is the fact that the curriculum now introduces an aspect not usually developed to such an extent in separate programs. While a number of subjects are required for the good understanding and practice of one profession as well as the other, complete training is provided in both. For instance, the training in kinesiology and kinesiotherapy will benefit the occupational therapist greatly, with regard to activities correlated with movement, activities of daily living, and re-education in walking. In like manner, physical therapy curricula have not generally included the psychological and psychiatric aspects of rehabilitation.

Dr. R. R. Lemieux, Assistant Professor of Psychiatry, University of Montreal, suggests that: "While physical therapy techniques do not seem to involve psychology to the same extent as occupational therapy, the actual

*At this point, it is appropriate and imperative to acknowledge the splendid collaboration received from the University of Toronto, Dean J. A. MacFarlane, Dr. A. T. Jousse, Director, and Miss Lillian Pollard, Senior Lecturer, Division of Physical and Occupational Therapy.

need for a psychological background proves to be subjectively more important for physical therapists who may, in certain instances, consider a problem referred to them as being only physical. There appears to be an inborn tendency to neglect the psychological aspect of the individual whose physical ailments are treated. Psychological training, in addition to its social value, is bound to give the therapist an awareness of psychological connotations, a better understanding of the patient's attitude towards treatment; as well as a help towards establishing the proper relationship with the patients and her colleagues of the rehabilitation team."

Last, but not least, the economic factor is a strong argument in favour of the combined course. This is evident in the teaching of basic sciences such as anatomy, physiology, physics, administrative procedures, medical and surgical subjects.

However, any new change is subject to a period of trial and experimentation; it is felt that final judgment of this venture must be reserved for a few years to permit a fair trial of the new program, which has evoked a great deal of interest and curiosity both at home and abroad.

Until recent months, there was only one fully qualified speech therapist and audiologist per million capita in this country. Because of the progressively increasing number of referred cases afflicted with speech and hearing defects, it became evident that a course in speech therapy and audiology should be instituted at the earliest possible date. To meet this need and in accordance with its long-term rehabilitation policy, the University of Montreal decided to incorporate a course in speech and audiology in the already existing School of Rehabilitation. It is worthy of notice that a significant number of lectures and demonstrations were already being given to the students of the Physical and Occupational Therapy Section which could benefit candidates in the contemplated Speech Therapy and Audiology Section.

With reference to the financial aspect, at least \$10,000, if not more, was required during the first year of operation. Needless to say, the setting up of a totally independent course would have cost far more.

Table I indicates basic material common to Physical, Occupational, and Speech Therapy and Audiology.

TABLE I.	
UNIVERSITY OF MONTREAL FACULTY OF MEDICINE	
BASIC COURSES COMMON TO PHYSICAL AND OCCUPATIONAL THERAPY, SPEECH THERAPY AND AUDIOLOGY	
Subject	Hours
Physiology.....	60
Psychiatry.....	30
Psychology.....	60
Pathology.....	15
Histology.....	25
Physical medicine and rehabilitation.....	15
Hospital techniques.....	15
Professional ethics.....	10
Administration.....	15
Social service.....	10
Total hours.....	255

Of course, special lectures on basic sciences and their applications in speech therapy and audiology are provided during the two years.

Table II depicts the specific Speech Therapy and Audiology program:

TABLE II.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE
MASTER OF ARTS DEGREE COURSE IN SPEECH THERAPY AND
AUDIOLOGY

First year:			
Subjects	Hours	Subjects	Hours
Anatomy.....	180	Phonetics.....	60
*Physiology.....	60	Lip-reading.....	30
*Psychiatry.....	30	Pædiatrics.....	15
*Psychology.....	60	Physics.....	15
*Medicine and surgery..	30	Speech pathology.....	60
*Pathology.....	15	Elocution.....	30
*Histology.....	25	*Nursing.....	30
*Medical ethics.....	10	Seminar.....	10
*Social service.....	10		
Second year:			
Subjects	Hours	Subjects	Hours
Aphasia.....	30	Physiology.....	20
Cleft palate.....	30	Psychology.....	10
Cerebral palsy.....	30	*Physical medicine and rehabilitation.....	15
Stuttering.....	30	Psychiatry.....	15
Dysphonia.....	30	Seminar.....	30
Odontology.....	30	*Administration.....	15
Clinical audiometry.....	30	Hospital affiliation.....	510

*Lectures common to Physical and Occupational Therapy, Speech Therapy and Audiology.

As a matter of interest, and since no other speech therapy and audiology course exists in Canada, the following highlights of the training program may be mentioned. Dr. Harold Westlake, Head, Department of Speech Correction and Audiology, Northwestern University, Evanston, Illinois, was appointed as consultant to the School. The number of hours and the subjects were assigned after careful study of many curricula of recognized American and British schools. However, time and experience will be our determining guide in the modification of the program to best fit our particular needs:

Anatomy.—The program comprises so-called *speech and hearing anatomy*. It is given as an independent course by the Department of Anatomy of the Faculty of Medicine and covers detailed study of the head, neck, trunk, and respiratory, cardiovascular and nervous systems.

Phonetics.—Consists of a study of the phonetic structures of the English and French languages, and also laboratory studies of phonation phenomena through graphic recordings.

Pædiatrics.—The lectures emphasize the various phases of child development.

Physics.—The course deals with the study of essential material required for the understanding and employment of hearing aids, recording and high fidelity instruments, audiometers, etc. . . ; it also describes sound-proof installations.

Lip reading.—This course is under the jurisdiction of specialized teachers on the staff of the Institute for Deaf-Mutes.

During the first year, the assistant professor in charge of speech therapy and audiology is responsible

for the teaching of the rudiments of speech pathology, and the theoretical and practical aspects of speech correction. Observation of screening techniques of minor speech defects in the various schools of the Montreal School Boards is also part of the program.

Public speaking.—These lectures deal with the personality of the speaker, elocution, good organization of thought, and correct and interesting presentation of subjects.

During the second year, the following subjects are taught:

Clinical audiometry.—This includes the study of the principal techniques, particularly the evaluation of hearing defects.

Odontology.—The Faculty of Dentistry deals with the subject of acquired and congenital maxillo-facial deformities and dental malformations, and also with dental and maxillo-facial prostheses.

Psychiatry and psychology.—These subjects cover the special problems of patients suffering from speech and hearing defects.

Other essential lectures relate to problems inherent in aphasia, stuttering, cerebral palsy, congenital malformations and dysphonia.

Clinical training.—During the second year, the students will spend five half-days per week in the departments of otorhinolaryngology, neurology and neurosurgery of various hospitals as well as in the speech therapy departments of rehabilitation centres.

Internships.—An internship of four months, under the jurisdiction of the School of Rehabilitation, and submission of a thesis on a subject approved by the Teachers Committee, are also requisite.

The course is open to both male and female students holding a B.A. or B.Sc. degree. A Master of Arts degree is awarded to those who successfully pass the two-year course.

Fig. 2 shows the chain of administrative responsibilities in the School of Rehabilitation:



Fig. 2

Now that the policy of the School of Rehabilitation has been established, it appears that by making adequate use of the various lectures and demonstrations, and in certain cases by adding specific courses, instruction may be given in the field of medical rehabilitation to other professional and interested groups.

Already five physicians, candidates for the certification examination of the Royal and Provincial Col-

leges, have attended as part of their four-year training the anatomy courses available to first-year students of the physical and occupational therapy section. This practice provides an excellent refresher course, and gives the future physiatrists the necessary outline of special anatomy taught to therapists.

A prosthetic technician, by the same token, attended for a period of one year, as part of his four-year training, several courses and lectures available to the first-year and second-year students of the same section. This program was submitted to and accepted by the American Board of the Prosthetic and Orthopedic Appliance Industry, Inc.

The expanded and long-term project affecting the School of Rehabilitation adheres to the principles outlined by Dr. K. C. Charron, Associate Director, Health Services, Department of National Health and Welfare, when he stated: "The Department of Physical Medicine and Rehabilitation might have the primary responsibility for a School of Physical and Occupational Therapy and a Department of Speech Therapy, whereas other teaching programs would probably be arranged in consultation with the heads of the units concerned. For example, the professor of the department would consult with appropriate persons in the School of Nursing, School of Social Work, Department of Education and the Department of Psychology to establish a rehabilitation teaching program for students receiving training within these units."

It seems that, with time and further experience, the School could extend its services to include post-graduate courses in the various aspects of rehabilitation; for instance, to placement and vocational officers, social workers, speech therapists, nurses and other personnel intending to work in the field.

In conclusion, I would like to quote Dr. Henry H. Kessler: "... adequate approach to rehabilitation can be translated into three terms: teamwork, service and a fierce belief in our individual responsibility for what happens to our fellow man."

SHORT COMMUNICATION

HYPNOSIS FOR TINNITUS*

J. GUILD, M.D., D.P.M., *Edmonton, Alta.*

A CASE OF tinnitus occurring in association with otosclerosis is presented because of its severity, persistence, threatened disorganization of life for patient and family, and its relief by hypnosis and social readjustment. A survey of recent literature reveals no mention of the use of hypnosis for this symptom.

How desperate can be the patient's plight and the physician's problem is indicated by the ultimate

resort to leukotomy in a series reported by Eli-thorn.¹ In those who improved the tinnitus was still present but the patients complained less of it or paid less attention to it. If leukotomy can produce beneficial results by such a process, it is not unreasonable to suppose that the same result might be achieved by hypnosis. In this case, however, hypnotic dissociation was used because it was considered the most likely to succeed with the patient's personality.

CASE REPORT

Mrs. N.D., aged 35, an active, intelligent woman, was referred to the Department of Psychological Medicine from the Ear, Nose and Throat Department because she wanted "legitimate" medical advice on hypnosis to relieve her tinnitus. In 1950 she complained of deafness in the right ear, which had begun after the birth of her first child eight years previously and increased with the birth of her second two years later. On February 2, 1953, a right stapedectomy was performed for otosclerosis when the patient was seven months pregnant. Deafness had been demonstrated in both ears, worse in the right. Tinnitus had been present only occasionally, was not troublesome, and was elicited only by direct questioning. Five months later she complained of a continuous high-pitched whistle. By January 1954 tinnitus in the right ear was severe, with slight aural discharge. On March 1, 1954, a fenestration was performed, with uneventful recovery. Her hearing failed to improve and tinnitus increased so that by September 20, 1954, she felt highly irritable and depressed.

Psychiatric examination on September 20, 1954, showed her to be anxious, and concerned about her marriage. Relations with a younger and weaker husband had become strained because intense discomfort from the tinnitus released and accentuated her normally suppressed resentments and desires for control. She was two months pregnant, and quite apart from the fear of increased deafness, disliked the idea of pregnancy and of rearing another child. Although unaware of it, she had modelled her somewhat assertive personality and her marital pattern on that of her domineering mother, whom she disliked. Sexual anxieties were increased by the opposite need: to be feminine and submissive in order to preserve the marriage. These anxieties showed in an increase of tinnitus during intercourse. In fact, any situation which was boring increased the noise, so that in life generally and even during intercourse she constantly sought external distraction. Thus the tinnitus came both to express and afford escape from her psychosexual difficulties and her conflicts over aggression.

The treatment plan was to remove the tinnitus from conscious awareness, and to redirect the anxieties so freed into more constructive channels. The need for outlet in independent activity was satisfied by suggesting she find outside work and social diversions which allowed her to excel.

Hypnosis was undertaken on September 20, 21 and 23, 1954. Four days later it was decided (on non-psychiatric grounds) to terminate the pregnancy. The noises had already become less, though no hypnosis was conducted after the third session. On September 30, a hysterotomy with severing of the Fallopian tubes was carried out. After operation the tinnitus was worse,

*This work was done during the tenure of a grant by King's College Hospital, London, England, for psychosomatic research.

but had begun to recede somewhat by October 18, when hypnosis was resumed.

The hypnosis was of the "patient-oriented" as opposed to the more dominant "hypnotist-centred" type. She was regarded as the central figure, and was invited to take part in those hypnotic experiences outlined by the therapist acting as guide. This sense of active participation was best suited to the psychologically more active and masculine part of her personality. No suggestions of sleep were made, for they would run counter to the patient's need for control and fear of passive submission. Only a few simple tests of hypnotic effect were used. She reached medium trance level. Suggestions were of the order: "Because you so want to be rid of the noise, and able to concentrate on other things, it will fade to the back of your mind and you will be less aware of it. You will have trouble listening to the noise and the more you try to listen the more will you find your attention drawn to the other things you would rather deal with."

Two sessions were held in the next fortnight. A limit of two weeks for treatment was then set, in which she had only two sessions. A note of November 8, 1954, reads: "Tinnitus disappearing. Having frequent periods in the day when she doesn't notice it—in fact, finds that when she listens for it, it is harder to keep her attention on the tinnitus than to let it go elsewhere. She emphasizes that the noise is still present, but that she just doesn't notice it." Sounds were gone the next week and she was discharged. One week later a fall caused the noises and the patient to return. She was seen twice at weekly intervals, once after two weeks and twice at three-week intervals. On January 29, 1955, she reported that both her depression and noises had greatly improved. There were seven further visits in the next five months. A Christmas card six months later stated that she had taken my advice about a job and had felt a mental uplift. She had "been wonderfully well . . . with a new lease of life. . . ." Noise was rarely present, and she was in radiant health. She had an interesting and active job, and her home life was happy. This result prevailed for one year after her last treatment.

However, when seen in follow-up shortly afterwards, she complained less of the increased noise—present over the previous few weeks—than of disconcerting irritability and surges of anger, with feelings at times that she could kill her child or smash up the house. The entire household was in a state of tension. When the satisfaction of her husband's constant need for interest and affection was thus jeopardized, his anger added to this tension, and rebellion by the patient against his demands created a vicious circle. Her fear of aggression and competition with men, and the marriage to a weak man as a way out, were explored psychotherapeutically. Dissatisfaction with her husband was born of her anger that he was not like her placid brother. The consequent desire to punish and frustrate her husband became apparent, and this realization allowed her to gain some control in a situation in which previously she had felt only mounting tension.

This family stress, always latent, was laid bare by the removal of her tinnitus which had until then expressed and masked these anxieties. It seemed the symptom had, fortunately, given way to the problem it represented. The opportunity was taken to attempt resolution of this problem, rather than risk its re-conversion into a symptom through the sole use of

hypnotic dissociation. Accordingly, no hypnosis was done on this occasion. After the interview she was given Serpasil and went home to work things out with her husband. Two weeks later the first of four weekly hypnotic sessions was undertaken. She went on holiday, took Luminal when tense, was able to stabilize relations with her husband, and is once again free of tinnitus. It is possible that marital difficulty will appear again, but this, unlike the tinnitus, is a problem which can be dealt with.

COMMENT

The psychological aspects of tinnitus have been well presented by Kennedy.² The writer subscribes to his view that "it is impossible to consider the tinnitus without the patient." Whatever the origin of tinnitus, psychophysiological or pathophysiological, the role it has come to play in the patient's life and social adaptation must be considered of central importance in planning hypnotherapy. Various personality conflicts and anxieties can come to be secondarily expressed by a tinnitus once established, whatever its origin. These factors can be assessed only by a full psychiatric history. If therapy is to be constructive and effective, and reduce to a minimum the possibility of substitute symptom formation, hypnosis must be used within the framework of such a psychological evaluation and form part of a new balance in the total personality readjustment.

Certainly in this case hypnosis has been of therapeutic value. To what extent the technique can be used to alleviate intractable tinnitus associated with organic disease, cannot be estimated. However, this case demonstrates again the importance of using hypnosis within the context of understanding a given patient's psychopathology.

The author is grateful to Dr. Denis Hill and Mr. T. Cawthorne for their suggestions and permission to publish the case.

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529 Tegler Bldg.,
Edmonton, Alta.

BRONCHOSCOPY IN HÆMOPTYSIS

Among 5713 patients admitted to the Hôpital Cochin Dispensary of Bronchoscopy, Paris, 675 had a positive history of hæmoptysis and some abnormality of the chest radiograph. Bronchoscopy revealed the lesion responsible for the hæmoptysis in 498 cases (73%). The positive bronchoscopic findings were: bronchial cancer 39%, bronchitis 25%, and endobronchial lesions produced by peribronchial lymph node calcifications 15%. These three entities, forming the bulk of conditions found at bronchoscopy, do not usually present a characteristic radiological pattern. The author feels that this study indicates the importance of the diagnostic use of bronchoscopy in all cases of hæmoptysis.—F. O. Segarra: *New England J. Med.*, 258: 167, 1958.

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THE FIRST BREATH: NATURAL AND INDUCED

If the newborn fails to take the first breath spontaneously, it is probably because the respiratory centre is depressed or damaged, and delay in respiration will increasingly depress the centre. It is generally agreed that no method of drug stimulation is adequate, though caffeine is acknowledged to have the highest therapeutic index.¹ Excessive manipulation and sensory stimulation are ineffective and often harmful, especially to a premature. Stimulatory drugs and procedures are all aimed at goading to function a mechanism that has already failed to respond to presumably the most powerful and effective physiological stimuli, and it is not to be wondered at that such relatively crude methods usually fail additionally.

What then is to be done?

Inflow and outflow of air in the lungs follows the laws of aerodynamics relating to pressure, volume and flow. If the infant cannot create the conditions of pressure variation by its own efforts, it would seem logical to create those conditions artificially so that, if the respiratory centre is depressed by anoxia, it may be enabled to recover and take over the normal respiratory function.

In order to create such conditions artificially, it is necessary to know the normal conditions of time, pressure and volume of movement achieved by the normal infant's first few breaths.

The difficulties of physiological measurement in the neonatal period have recently been elegantly overcome by Karlberg, Lind and Escardo² in Stockholm, and they have produced some remarkable figures.

In the normal newborn with the first breath the pressure within the thorax falls to about -60 to -80 cm. (exceptionally to -120 cm.) of water before any appreciable volume of air flows into the lung. Between -60 and -80 cm. water there is an inrush of about 80 ml. of air within 0.3 sec., whereat the intrathoracic pressure again rises close to atmospheric and the direction of airflow is reversed by the elastic recoil of the lung. Only rather more than half of the inspired volume is expired, the remainder going to build up the residual volume

of the lung. With successive breaths, lessening negative pressure is exerted and smaller volumes are respired until, after a few breaths, only -20 cm. water and 20 to 30 ml. of air are registered. Within a matter of hours the intrathoracic pressure swing will have fallen to the normal -3 to -5 cm. of water and 18-20 ml. tidal volume.

Since these very high inflating pressures are developed naturally with the first breath, it must be inferred that they are necessary to overcome cohesive alveolar forces and surface tension effects in the airless lung. Laboratory investigations of animals' isolated lungs by Day³ and his associates give fairly comparable, though rather lower, inflating pressures.

These latter workers made an additional important contribution in pointing out that the time factor for which pressure was applied influenced the degree of inflation, and that long duration conduced to lung rupture even at relatively low pressures. They found that a duration of 0.15 sec., repeated many times with a pressure of 40 cm., was both safe and effective in opening up collapsed animal lungs. The duration of the initial gasp of the newborn human was shown by Karlberg's group to be 0.2-0.3 sec. The higher pressure and longer time application in humans may be related to anatomical differences in size and lung capacity.

Thus a normal newborn takes in about 80 ml. of air at a distending pressure of about 80 cm. of water within about 0.3 sec. Is it not, therefore, logical to attempt to create these natural conditions artificially for the infant who fails to take the first breath normally?

This concept seems to cut right across much current opinion, for example—"Machines blowing oxygen into the lungs under high positive pressure were condemned; they would blow a hole in the tissue before expanding the alveoli"—at a recent meeting of the Section of Obstetrics and Gynaecology of the Royal College of Physicians of Canada.⁴

It is suggested now that these new physiological observations indicate revision of this opinion. With proper safeguards as to duration of application and total volume injected, it is contended that artificial positive pressure inflation of the lungs of the apnoeic newborn is logical and may be a life-saving measure. It is immaterial as far as the lung is concerned whether the pressure is a negative one developed within the pleural space by the baby's own effort, or a positive one applied through the trachea artificially.⁵ The result in terms of transpulmonary pressure is exactly the same.

If it is conceded that these observations justify a new approach to the problem of the apnoeic infant, what methods are available to create artificially the physiological condition of the first breath?

One approach has been by Cherniak and Boyd⁶ in Winnipeg, who used a solenoid operated valve to divert oxygen at a pressure of 50 cm. of water

into the intubated trachea for a time not exceeding 0.1 sec. ten times in each minute.

Increasingly practised is a modified form of mouth-to-mouth insufflation. It is possible, with a little practice blowing on a mercury manometer, to create short blasts of pressure of about 40 to 60 cm. H₂O (29 to 44 mm. Hg). Such pressure blasts can then be applied to the infant's lungs through an endotracheal tube. A simple refinement of this method has been suggested by Dr. Richard Day⁷ of New York. A box of a volume capacity of about 75 ml. is used. The box is provided with a loose rubber diaphragm which separates the operator's breath from the infant's to obviate the danger of infection and limit the volume capacity of the box. The infant's side of the box is filled with air or oxygen through a valve and is then connected to an endotracheal tube. The operator applies his mouth to a mouthpiece and exerts a controlled duration pressure blast which displaces the membrane across the interior of the box, so forcing the air or oxygen into the infant's lung. This process is repeated once or twice only. Persistence beyond this invites lung rupture. In this way a controlled volume and pressure are applied for a safely short duration.

It is the experience of a centre using controlled positive-pressure inflation that cases of pneumothorax are no commoner following this procedure than in newborns who have had no resuscitation whatsoever.⁸ If a clinically significant pneumothorax does occur, it should not be difficult to detect and treat immediately.

It will, of course, be necessary to subject high positive pressure resuscitation of this type to controlled clinical trial. It does, however, seem to be based on sound physiological principles and it is suggested that the trial is warranted.

PAUL SWYER

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Editorial Comments

SYSTEMIC LUPUS ERYTHEMATOSUS—A REAPPRAISAL

Many additions to our knowledge of the still-mysterious affliction lupus erythematosus have been made and documented during the past few years. As is usual in such circumstances, these recent contributions have occasionally had two undesirable side-effects. Firstly, they have raised the suggestion that our knowledge of this disease is unmar-

shalled, disconnected and disjointed. Secondly, they have tended to make us forgetful of numerous earlier contributions—if not to the basic understanding of the disease, then at least to the cataloguing of symptoms and lesions.

In British medical circles, at least, a conscious effort now appears to be under way to "tie up the loose ends", and to take inventory of our knowledge of this disease, including both the older and more recent contributions. It is hoped that this process of synthesis may bring to light new concepts of etiology, and possibly raise new questions whose answers it might be wise to seek.

This effort has resulted in three recent and very useful British additions to the already voluminous literature on the subject: firstly, the publication of the 1957 Lumleian Lectures¹ delivered to the Royal College of Physicians of London earlier that year; secondly, an appraisal² of the L.E. cell and its significance; and thirdly, a description³ of an apparently specific serum factor that may throw some light on many of the disparate though basically unitary characteristics of the morbid anatomy.

It is perhaps not sufficiently appreciated that lupus erythematosus has been recognized as a clinico-pathologic entity for 130 years; that it was thoroughly documented, not only as a skin disease but also as a general illness, by Hebra, Kaposi and Jonathan Hutchinson; that, in 1895, Osler helped to place the disease in its proper medical perspective and began the search for causes; that Libman, Sacks and Gross contributed much of our present knowledge of the cardiovascular manifestations; and that Klemperer, Baehr and Pollock, in 1941, fortunately or unfortunately reintroduced the terms "fibrinoid degeneration" and "collagen disease" as basic descriptive terms in this connection. This latter terminology has had the undesired and undesirable effect of opening the way for the present-day tendency to develop a unitary etiologic concept for a number of probably completely unrelated diseases.

It was not until 1948, however, that fundamental research into the underlying tissue background of lupus erythematosus was permitted, as the result of the discovery by Hargraves and his coworkers of the L.E. cell in the bone marrow of patients with systemic lupus.

It is now, of course, well known that practically all body tissues may be affected in this disease. The cardiac involvement spares neither endocardium, myocardium nor pericardium. The spleen does not escape. In the respiratory system, the pleura, the pulmonary vasculature and perivascular and the alveoli are attacked. The kidneys are almost consistently attacked, the invasion beginning in the strategically placed glomerular tufts. The nervous system is involved, albeit primarily via its vascular system; and very recent work has indicated that peripheral nerves, previously considered exempt, can now be demonstrated to be involved, not only via the blood vessels but also primarily. The cutaneous manifestations are, of course, so well known as to require no extended discussion. The muscles and joints are frequently attacked, with resulting fibrositic and rheumatoid syndromes, the latter circumstance having stimulated the inclusion of rheumatoid arthritis among the

so-called "collagen diseases". The digestive system, including the liver (*vide infra*) does not escape; and the retina occasionally shows specific changes diagnostic of the disease.

Hæmatologic and immunologic changes in the circulating blood suggest the fundamental nature of systemic lupus. Normocytic orthochromic anæmia, insidious hæmolytic (due to hypersplenism or auto-immunization), leukopenia, thrombocytopenia, hyperglobulinæmia, elevation of the erythrocyte sedimentation rate, a positive Rose test, a tendency to manufacture abnormal plasma proteins of the antibody type, the presence of circulating anticoagulants, cold agglutinins and cryoglobulins—all these have been and continue to be reported.

The L.E. cell phenomenon is in essence the lysis and ingestion of dead nuclear material by intact white cells, usually neutrophils, under the influence of a factor present in the serum of patients with systemic lupus. Since its discovery in 1948 by Hargraves doubt has frequently been cast on the specificity of this phenomenon for systemic lupus erythematosus. However after three years' experience with L.E. cell tests in patients with systemic lupus, and in 495 patients with other conditions, Wilkinson and Sacker² are convinced that the L.E. tests *if properly performed and interpreted*, will yield false-positive reactions only with extreme rarity. The exceptions include an occasional case of cirrhosis of the liver, and hydralazine reactions. Even these two exceptions may not be entirely authentic. It now seems possible that some of the cases of "cirrhosis" of the liver in which the L.E. test was positive represent the end-stage of "hepatic lupus" or "lupoid hepatitis", the lupoid etiology having been marked by the organ-specific manifestations of nodular regeneration and fibrosis. Hill¹ also suggests that some of the patients who developed the lupus syndrome while on hydralazine therapy for hypertension may have been in the early stages of systemic lupus before the drug was started. This seems "somewhat far-fetched, especially since the evidence of lupus promptly disappeared when the drug was discontinued. In any case, the demonstration of etiologic association with a drug does not detract from but rather adds to present-day concepts of the fundamental background of the disease.

The relation of the chronic discoid form of lupus to the systemic form is still controversial; but more and more evidence, admittedly circumstantial, is being adduced to link the two manifestations. The answer to this question is not likely to be too long delayed.

The fundamental etiology of this mysterious disease is still unsettled. The clinical improvement (though temporary) resulting from corticosteroid therapy, as well as the micro-anatomic observations, have weighted the scales on the side of a basic abnormality in the mechanism of antibody production or of antigen-antibody reaction. This is strongly supported by the knowledge that the factor responsible for the L.E. phenomenon resides in the gamma-globulin fraction of the serum. Holborow and his co-workers³ have recently demonstrated conclusively that sera giving a positive L.E. cell test contain a globulin factor *having an affinity for tissue nuclei*; and it is becoming increasingly ac-

cepted that the widespread cellular lesions are due to the fixation by tissue cells of this abnormal globulin, and the consequent disturbance of their biochemical (enzymatic³) structure, with resulting alteration of function.

The underlying cause of the production of this abnormal globulin still remains unknown. It is suggested, however, that the antibody-forming cells of the reticulo-endothelial system are excited to produce these antibodies by subtle changes in the patient's own tissues or in the normal breakdown products of these tissues, these changes in some way rendering the tissues antigenic. Alternatively, the tissue changes resulting in antigenicity and auto-immunization may be caused by specific though perhaps unrelated drugs, such as sulfonamides and hydralazine. For this concept, there is increasing, though admittedly circumstantial, evidence.

Until 1940, no specific treatment was available for this dread disease. At that time, however, antimalarials such as atabrine were shown to have at least a temporary beneficial effect. These were then generally used for about 10 years, until the advent of the corticosteroids, which are still currently popular. During the past few years, however, the popularity of the antimalarials has undergone a sharp rise, probably coincident with the availability of chloroquine.

It is probable that both the steroids and the antimalarials will continue to be used, side by side, until full elucidation of the underlying character of the disease renders its prevention possible and treatment unnecessary—a situation that cannot now be too long delayed.

S. J. SHANE

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VACCINE FOR MULTIPLE SCLEROSIS

In several articles recently appearing in Russian medical journals, reference is made to a virus as a cause of multiple sclerosis and acute encephalomyelitis, and to successful treatment of these diseases by a vaccine. From these statements it might be assumed that the writers had no doubts about the matter, and that there was a solid scientific and clinical basis for their beliefs. A search of the literature elsewhere, however, failed to yield references to the original work, or its confirmation. Textbooks of neurology from English-speaking countries yielded one reference. Brain¹ states that "the isolation of a filterable virus by Margoulis, Soloviev and Shoubladze (1946) is at present unconfirmed. . . ." A monograph dealing exhaustively with all aspects of multiple sclerosis does not even mention the Russian workers or their findings, although the problem of etiology and relationship to other demyelinating diseases is thoroughly discussed.²

As far as can be ascertained, the only published investigation of the Russian virus and vaccine in

English-speaking countries was carried out in 1957. It was undertaken by Dick and his colleagues³ at the department of microbiology of Queen's University, Belfast, after a request had been received to obtain the vaccine for treatment of patients with multiple sclerosis. It appears that the virus in question was recovered by Margoulis, Soloviev and Shoubladze in 1942, and is one of five strains isolated from cases of human encephalitis. This SV strain was later reported by Shoubladze as being closely related to rabies virus, but differing in some respects, especially in the absence of Negri bodies from infected vertebrates. Shoubladze and her colleagues claim that sera of a large percentage of patients with multiple sclerosis and of patients convalescing from acute encephalomyelitis neutralized the virus of E.H.A. (*encéphalomyélite humaine aiguë*) whereas controls failed to do so. Another claim was that 50% of patients with multiple sclerosis had antibody to E.H.A. virus.

Dick *et al.* describe the various tests they carried out on the virus, which was obtained from Soviet Russia through the National Institute for Medical Research, London. The vaccine consists of a formalized suspension of the brains of rats or mice infected with the virus. For details of the virus and vaccine, as well as of the various tests carried out by the British team, the reader is referred to the original article.³ The summary reads as follows: "The SV strain of E.H.A. virus which has been used to prepare the vaccine of Shoubladze and Margoulis for the treatment of multiple sclerosis appears to be *rabies virus*. We were unable to demonstrate any specific neutralization of the SV strain of E.H.A. virus with sera from patients with multiple sclerosis. The claims of the Russian authors for amelioration of 30% of patients treated with this vaccine is of the same order as that of spontaneous remissions (44%) of fresh lesions in untreated patients. The possible danger associated with the use of any rabies vaccine may make the use of the 'vaccine of Shoubladze and Margoulis' dangerous in the treatment of multiple sclerosis."

Multiple sclerosis has perhaps been associated with a greater share of investigations ending in failure than other diseases. Claims are difficult to assess, as can be seen from reports on effects of certain treatments. For example, Swank⁴ claims that the condition of 64% of 153 patients improved or held stable for four years on a low fat diet. That the claim put forward by Shoubladze *et al.* was not substantiated by British workers is unfortunate. One may argue that a single unfavourable report, even of a carefully executed trial, does not invalidate the findings of the Soviet team. It is however disturbing to find how readily Russian medical writers have accepted the discovery of a causative agent for multiple sclerosis and a successful vaccine therapy. There is no evidence of their desire for adequate confirmation of such an important discovery. The lack of interest shown to these claims in English-speaking countries is also amazing. Even taking into consideration the notorious difficulty of obtaining original articles and detailed data from Soviet medical scientists in the past, 15 years seems a long time to have to wait for confirmation or refutation of a claim regarding the etiology and treatment of multiple

sclerosis. The present trend towards increasing exchange of scientific information between Soviet Russia and the West should do much to prevent this in future.

W. GROBIN

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CLINICAL MANAGEMENT OF MYOCARDIAL INFARCTION

A panel discussion on the clinical management of myocardial infarction with Dr. Irving S. Wright as moderator is reported in the *Journal of the American Geriatrics Society* (5: 879, 1957). Early ambulation after myocardial infarction means rigid rest in a chair. Management has to be individualized but the general rule is three weeks' rest in bed or chair, three weeks of gradually increasing exercises, and resumption of work at the end of three months. Avoidance of heavy sedation, and the movement of legs and feet some 100-500 times daily, should minimize the danger of thrombosis. Rupture of the infarcted muscle or unsatisfactory healing is not likely as a result of mild exercise, such as getting out of bed or walking a few steps and using a commode.

The use of oxygen is probably overdone in most places, often because of public pressure. Its chief value is in shock, cyanosis and pulmonary congestion. In hot weather the cooling effect of the oxygen tent reduces the work of the heart and is most comforting to the patient. On the other hand it may have undesirable psychologic effects on apprehensive patients.

Aminophylline intravenously should be used only for pulmonary oedema and bronchospasm and not for its effect on the coronary arteries, which is very doubtful. It is useful in patients with Cheyne-Stokes respirations. Nitrites were considered of no value in prevention of myocardial infarction or in its treatment. It is unlikely that they do any harm in patients who are used to them, considering that most of these patients will usually have taken one or two tablets at the onset of the attack before calling the doctor. Sprague quoted a case in which nitroglycerin was given for prolonged chest pain and the patient subsequently developed myocardial infarction.

Digitalis should be administered only for the relief of congestive failure and in certain cases of auricular fibrillation. Because the heart muscle is very sensitive during the acute stage of infarction, Sprague preferred to rely on mercurials and other measures for the relief of congestion on the first day or two. Lanatoside-C was the drug of choice for intravenous use in emergencies. Tablets of whole leaf were considered of equal value with purified preparations. Smoking should be stopped permanently by all patients after myocardial infarction.

Anticoagulants should be used in all severe cases of myocardial infarction. In mild cases some panelists preferred not to use them. The argument in favour of their use in all cases of myocardial infarction was that it is difficult, if not impossible, to predict at the onset which case is going to be mild. Wright stated that he had at the time of this discussion 50 reports of studies of series with adequate controls, including 10 from the Soviet Union, and all of these showed considerable reduction in incidence of thrombo-embolism and mortality in patients receiving anticoagulant therapy. Dicoumarol was the most widely used anticoagulant, but Hedulin was considered superior to it in maintaining constant prothrombin levels. Some start with heparin and others with Tromexan (ethylbiscoumarate).

According to Stamler, epidemiologic, clinicopathologic and animal experimental facts strongly support the dietary metabolic theory of atherogenesis. This evidence points to the usefulness of a diet low in fat cholesterol and total calories in the treatment of coronary heart disease. There is no value in the addition of essential fatty acids to the diet. One should, however, make sure that the reduced diet is balanced and contains all the essential nutrients. All the panelists admitted that they recommend reduction of fats and total calories to their patients who have had one myocardial infarction, although they were not sure that this reduced the likelihood of another attack.

NEW ANTIHYPERTENSIVE AGENT

During the past decade, emphasis in the treatment of hypertension has shifted from surgery to drugs, but the many antihypertensive agents that have undergone clinical trial have in general proved disappointing. This is not to say that these drugs lack potency; some of the most commonly used antihypertensive agents are extremely powerful drugs. The problem has actually revolved around excessive potency or undesirable side-effects or both. Because of this, these preparations require such careful supervision and such delicate adjustment of dosage that they present great difficulties in management, both to the physician and to the patient. It is also, we believe, a fair statement that most antihypertensive agents not producing undesirable side-effects are usually not sufficiently potent to produce the prime effect for which they are prescribed. To put it simply, most potent antihypertensive agents have restrictively undesirable side-effects, while those without such limitations are usually not potent.

It is of some interest, therefore, to note the emergence of a new antihypertensive agent which, to date, has not been shown to suffer from either

of these deficiencies. In the past few months, clinical trials with a new, orally effective diuretic agent, *chlorothiazide*, carried on simultaneously and independently in two clinics,¹⁻³ have resulted in the accidental but extremely interesting finding that this drug is a true antihypertensive agent without reference to its diuretic effect.

This preparation, which is a carbonic anhydrase inhibitor of the sulfonamide series and has proved to be a reasonably potent, orally effective diuretic agent, is more effective as a hypotensive agent when given in combination with other drugs than it is alone. However, it has frequently been found possible to reduce or even omit the dosage of some of the less desirable antihypertensive agents, when chlorothiazide is used as an adjunct. The reductions in both systolic and diastolic arterial pressures following the use of this drug are sometimes quite striking.

It is also of interest to note that previously splachnicectomized patients have a striking blood-pressure response to orally administered chlorothiazide, and that hypertensive subjects pre-treated with ganglionic-blocking agents are more sensitive to the hypotensive action of chlorothiazide than those pre-treated with other types of antihypertensive drugs. Dietary restriction of salt appears to increase markedly the antihypertensive effect of chlorothiazide in some patients.

It appears reasonably well established that part of the hypotensive action of this drug is related to its very potent diuretic effect. However, for several reasons, most observers are convinced that chlorothiazide has unique antihypertensive properties in addition to its diuretic propensities.

It would appear, therefore, that chlorothiazide represents a distinct advance in the search for effective antihypertensive drugs, and that it deserves extensive clinical trial.

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C.M.A.-B.M.A. CONJOINT MEETING, EDINBURGH, JULY 18-24, 1959

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Medical News in brief

PLASMA ERYTHROPOIETIC FACTOR

The presence of an erythropoietic factor in plasma, first demonstrated by Carnot and Deflandre in 1906, has been the object of further study by Linman, Bethell and Long of Ann Arbor and Chicago (*J. Lab. & Clin. Med.*, 51: 8, 1958). These workers collected plasma from rabbits made anæmic by injections of phenylhydrazine, and extracted various fractions from it. One of the fractions was the result of straight ether extraction and was known as "whole plasma-ether soluble". The others were obtained from water dilution and precipitation with perchloric acid which deprived the solution of all its protein content. Part of this "protein free plasma extract" (PFPE) was further submitted to ether extraction, resulting in two further fractions—one ether-soluble, the other ether-insoluble. Examination of the bone marrow of rats injected with these fractions showed that a definite stimulation of erythropoiesis was obtained with injection of whole plasma-ether-soluble PFPE, and PFPE-ether-soluble fractions. It appears that the heat-stable ether-soluble fraction, which is probably lipid in nature, increases the rate of cellular division of already existent marrow erythrocytic precursors, with resultant erythrocytosis due to the production of microcytes with shortened survival times. Another factor which is ether-insoluble and probably protein in nature augments iron incorporation and hæmoglobin synthesis. The authors suggest that the presence of two plasma erythropoietic factors differing in nature and mode of action may explain the conflicting experimental findings reported by investigators in the past.

GONADAL DOSAGE FROM DIAGNOSTIC RADIOLOGY

The genetic effects of radiation are still controversial, but it would seem that diagnostic x-ray exposure makes an important contribution to the total radiation dose received by human gonads. At the Oakridge National Laboratory, Lincoln and Gup-ton (*J. A. M. A.*, 166: 233, 1958) investigated the doses of x-rays received by employees with the purpose of estimating the total exposure of the gonads to ionizing radiation. A manikin was constructed to permit measurement of radiation received by skin and gonads during examination of the chest, knee, abdomen, pelvis and vertebral column. Their results suggest that the average total gonadal dose per year was 0.013 rads for males and 0.035 rads for females. A high proportion of this dose was received during abdominal examination; the number of abdominal examinations must therefore be kept to a minimum, particularly in children. To reduce the gonadal dose in diagnostic x-ray, the authors suggest (1) using a cone or diaphragm of minimum practicable size to reduce the dose to all areas outside the field of interest; (2) use of filtration (2-3 mm., aluminium), at the source to reduce dose due to useless soft scattered radiations; (3) use of the highest kilovoltage and lowest milliamperage practicable. They also suggest that an industrial medical department is a logical place to begin keeping personal diagnostic radiation exposure records, while

admitting that it is hard to get exact information on exposures away from work.

DRUG REACTIONS AND OTHER HARMFUL EFFECTS OF TREATMENT

Periodically, warning voices are raised reminding us of the danger of causing harm by treatment. We do well to remember that treatment begins the moment the patient enters the doctor's office, and that the old dictum "primum nil nocere" includes history taking and physical examination. With the growing number of complex drugs and other methods of treatment, undesirable side-reactions and more serious toxic effects are commoner. That this should cause us concern is well illustrated by a German review by Bock (*Deutsche med. Wchnschr.*, 82: 1889 and 1981, 1957) of the whole field of damage due to treatment. Mentioning only in passing the damage that can be caused by faulty management of an anxiety state or diagnosis of non-existent heart disease, and other obvious mistakes in administration and dosage of drugs, this author concentrates mainly on damage due to drugs even when administered on proper indications and in approved dosage. Not only have drugs become more powerful, but patients have become more vulnerable. Exposure to a variety of drugs and chemicals is so wide-spread that sensitization is almost unavoidable.

Bock urges careful history taking, with emphasis on allergic or other untoward reactions to drugs, foods and other materials not only in the patient but also in his immediate family. Such reactions should be underlined in red on the patient's card or chart. Recent medication and its effects should be ascertained before embarking on any treatment.

This excellent review or a similar one is worth reading from time to time by all those engaged in active treatment.

CLINICAL SIGNIFICANCE OF STERNAL TENDERNESS: VALUE OF SELECTIVE MARROW BIOPSY IN MALIGNANT DISEASE

Two hundred patients about to undergo sternal puncture were examined by Gower (*Lancet*, 1: 73, 1958) for tenderness of the sternum; 61 were considered to have definite tenderness, mostly sharply localized to small areas. The diagnoses ranged from metastatic carcinoma and leukaemia to myelomatosis and megaloblastic anaemia. A table summarizes the diagnoses and the presence or absence of tenderness. In all the cases where tenderness was elicited, puncture was carried out in the tender area. In some cases this selective marrow aspiration yielded abnormal marrow, whereas puncture only 1 cm. above the tender area failed to reveal any abnormality. Selective puncture of tender bone is recommended as useful in difficult diagnostic problems, and finding of abnormal cells in hitherto unsuspected malignant disease is reported. The author feels that selective puncture of tender bone would improve the chances of finding tumour cells in marrow, at present only infrequently achieved.

(Continued on advertising page 62)

GENERAL PRACTICE

A MEDICAL SCHOOL DEPARTMENT
OF GENERAL PRACTICEROBERT A. DAVISON, M.D.,*
Memphis, Tenn., U.S.A.

THE DEPARTMENT OF GENERAL PRACTICE of the University of Tennessee College of Medicine found its origin through the basic concept that the medical schools should give students some realistic orientation and experience in the various forms

of medical practice. The teaching of the specialties within the medical school has been traditional, but general practice, which numerically and geographically is the most widely practised of all fields of medicine, had received no emphasis or consideration in the undergraduate teaching program. The highly departmentalized specialty clinics and medical services within the medical school and their affiliated teaching hospitals in no wise simulate the conditions found in general practice. Furthermore, in the past, teachers within our medical schools had to a large extent done considerable general practice before becoming specialists, but at the present time practically none have had any actual experience with this type of medical care. Many medical schools have recognized this deficiency in both their curriculum and their faculty and have made additions and other changes in their curriculum for the purpose of offering some experience and orientation in general practice to the students. The development of the specialty departments had paralleled the historic growth of the medical school, but no such precedent has been set for the establishment of a department of general practice. This has offered some problems as to its position in the curriculum and its function and organization.

In the United States the resulting curricular changes towards student orientation in this form of practice have included such teaching approaches as family care programs of varying nature and duration, preceptorships—in which the student practises with a general practitioner for a period of three to six weeks, living and working with him for 24 hours a day—general practice clinics and general practice lectures.

A large number of our students at the University of Tennessee are interested in doing general practice, and we feel that this interest should be encouraged, nurtured and guided to an effective and qualified fruition. Much too frequently the student enters medical school "social-minded and leaves lesion-minded". He is taught "how to attack a disease but not how to approach a patient". He

examines a white female, age 27, gravida IV, para III, rather than a 27-year-old pregnant mother of three children. He enters medical school with a desire to learn to treat people and alleviate their suffering. To him patients have always been individuals in a family setting. Yet as soon as he enters medical school, he is instructed to fractionate this indivisible individual into systems of physiology, anatomy, pathology and biochemistry. The patient not only soon loses her identity as a member of society and the family unit, but she also loses it as an individual and becomes a complicated and intricate assembly of systems and organs. To say to the medical school applicant, "We must consider the patient as an individual with a family and social and economic environment," would be to him an unnecessary emphasis on the obvious. But by the time he is ready to graduate he has been so thoroughly "brain-washed" by our methods of teaching and points of stress that to approach the patient as other than a pathological specimen too often seems unscientific and inappropriately idealistic. This we are coming to recognize as a glaring fault in our teaching methods. Medical schools have been graduating biologists and medical scientists rather than doctors. The medical school should be a professional school for the training of doctors as well as a technical school for the training of scientists. The two should be combined without the loss of the value of either.

The student must be taught the science and the humanities of medicine. He must be given the opportunity to observe and evaluate the home and social environment where disease finds its origin. All phases of health and disease are included in the modern concept of preventive and curative medicine. To understand completely the illness of a patient, one must be familiar with the social and economic environment in which it found its initial expression. The general practitioner's approach to illness has by tradition and definition included all these factors, well seasoned with compassion, understanding, sympathy, and empathy.

A large number of our schools have developed certain changes in the undergraduate curriculum for the purpose of orienting students to the general practice of medicine. These changes have included preceptorship programs, general practice clinics, family care programs and general practice lectures. It is felt that these general practice orientation programs broaden the therapeutic perspective of the student. The specialties teach the vertical approach to medical care and encompass depth, while the breadth of medical care, as exemplified by the general practitioner as a family physician, is being taught through general practice orientation. The family physician, or general practitioner, should not be considered as a medical sociologist and guardian who functions entirely as a diagnostic agent for treatment centres elsewhere. His family orientation to illness makes him an essential member of the medical team for the total effective battle against disease. He differs admirably and essentially from the specialist with his almost strictly hospital and office practice. It must be recognized that the qualified general practitioner can completely manage 85% of the illnesses to which the

*Head, Department of General Practice, University of Tennessee College of Medicine, Memphis, Tennessee.
Read before the First Annual National Scientific Convention of the College of General Practice of Canada, Montreal, Quebec, March 4, 1957.

public is liable and that the student interested in this field of practice must be encouraged and trained to properly fill this important place in medicine.

GENERAL PRACTICE CLINIC

In September 1951, through the recommendations of Dr. Henry Packer, Professor and Chief of the Division of Preventive Medicine, University of Tennessee College of Medicine, the faculty council approved the addition of a General Practice Clinic to the out-patient teaching curriculum. The funds necessary for the establishment of this clinic were obtained through a generous three-year grant from the Commonwealth Fund. The General Practice Clinic was physically set up in the out-patient department and was equipped to resemble the office of a good general practitioner. Originally, the clinic consisted of eight examining rooms, a laboratory, complete x-ray and dark-room facilities, minor surgery room, waiting room, physiotherapy room, and a general nurses' utility room. The students came to this clinic as a required part of their curriculum for six days during the 11th and six days during the 12th quarter of their senior year. The activities of the clinic have since been expanded. The clinic now has 16 examining rooms and the students are assigned to the clinic on alternate days for a period of 5½ weeks during their 12th quarter (the three months preceding their graduation from medical school).

The staff of the General Practice Clinic is made up entirely of general practitioners.

This gave the students an opportunity to associate with general practitioners in active practice. The student interested in going into general practice had for the first time an opportunity to consult with a faculty adviser who was familiar with this field of practice and who could broaden his knowledge and understanding of family medical care.

CLINIC EQUIPMENT

The examining rooms within the clinic are complete rooms with solid doors and equipped with examining tables, stools, chairs, and writing desks, which allows the student and the patient complete privacy during the interview and examination. If during the history and physical examination certain laboratory procedures seem to be indicated, there is a small well-equipped laboratory with a technician who is also a member of the staff, through whom the necessary laboratory examination may be completed. The laboratory is equipped to do routine blood and urinalyses, spinal fluid examination, and various smears from the orifices of the body. Any laboratory work not routinely done in the laboratory in a doctor's office is forwarded to the appropriate hospital laboratory. Numerous diagnostic facilities are available in the clinic, and the student is instructed in their use. We like to think of this clinic and this department's work and teaching obligations as a proving ground for the student's academic training so far completed. An electrocardiograph, proctosigmoidoscope, diathermy apparatus, and complete x-ray facilities are available for his use. The student uses this equip-

ment under close supervision of the general practice staff. Minor surgery sets and biopsy sets are available for office procedures demanding their use. Many other procedures characteristically done in the general practitioner's office are demonstrated and done by the student in this clinic.

PURPOSE OF THE CLINIC

One of the objectives of the general practice clinic is to give the student an opportunity to correlate, coordinate, and integrate all his specialty training in an approach to a patient's problems. An effort is made to orient the student towards the patient rather than the disease. A maximum of 12 students are assigned to the clinic per session and a total of 30 patients are assigned to the clinic each day. The selection of the patients includes eight medical cases, seven surgical cases (primarily minor surgical or diagnostic major surgery), seven gynaecological cases, five paediatric cases, and three dermatological cases. No effort is made to select patients with psychiatric complaints but a large percentage of these patients have psychosomatic problems as an overlay of their disability. These patients are selected by the medical director of the out-patient departments and include those coming to the university hospital clinics for medical care. By this means, a good cross-section of general practice patients is seen daily in the general practice clinic. Patients are given appointments to return to the clinic and are followed up by the same student at the time of their return. Unlike other clinics to which the student is assigned, he does not know in advance of general practice clinic hours whether he will be seeing children with skin diseases or a cardiac patient with gynaecological complaints or other medical or surgical problems in either sex at any age. He must apply his specialty training to the immediate problem at hand, and try to resolve the total situation and meet the needs of the patient. The student is required to take a complete history and perform a physical examination on all new patients.

THE FAMILY CARE PROGRAM

The objective of the Department of General Practice—the teaching of comprehensive medical care of the patient and his family—was not and could not be fully met through the instructional limitations of the General Practice Clinic. It did not offer the student the opportunity to observe the home background of the patient and the environmental origin of his illness. The student did not have the opportunity to actively participate in home medical practice. To correct this deficiency the Family Care Program was added in May 1952. This program was designed to permit the student to see, live and practise family medicine as an actively practising general practitioner for the last 12 months of his school curriculum. He is assigned an indigent family for whose medical needs he assumes full responsibility during his last year in school. He makes house calls at the request of his patients regardless of the hour of the day or night. He is equipped with a medical bag, which is made available to him in the General Practice Clinic, or he is privileged to equip with the necessary diag-

nostic instruments a bag of his own for his house calls. The General Practice Clinic also functions as the private office for all the students on the Family Care Program. This office is open for their use from 8:30 a.m. to 8:00 p.m. Monday to Friday and from 4:00 to 8:00 p.m. Saturdays and Sundays. The student makes appointments with his patients for examinations and treatments within the office. If necessary, the patient is hospitalized and the student follows up the patient while the latter is in the hospital regardless of the service to which the student may be currently assigned.

By these arrangements the student becomes more than just an observer or listener in the art and practice of medicine; he functions in every manner as the personal physician of this particular family unit. He makes office appointments when necessary, and house calls when requested, determines the diagnosis and institutes treatment, all under the intentionally unobtrusive but always available supervision of the General Practice staff. Every effort is made not to destroy or attenuate the doctor-patient relationship established by the student. When the patient accepts the student as his family physician, the student reacts realistically to this heavy responsibility with an enthusiasm and interest not seen in his usual out-patient work. He becomes a personal and family physician, intensely interested in every factor that plays a part in his family's medical problems. He becomes more than a medical biologist or scientist; he rapidly becomes a doctor, schooling himself in the art and science of medicine. He comes to realize that his best instructor in medicine is his patient, if he will but remain patient-oriented.

Informal family care conferences are held weekly during both the 10th and 11th quarters of the senior year. At these conferences, attended by the students and staff, a student presents a discussion of his family and all the preventive, therapeutic and rehabilitative medical problems that he has encountered during his functions as a family physician. Smaller advisory conferences are held weekly throughout the entire year that the students are on the Family Care Program. The student is made to feel a colleague as well as a student, and numerous in-the-corridor and on-the-street conferences between staff and student occur. These conferences, both scheduled and unscheduled, encouragingly demonstrate that the student is becoming patient-oriented and that he is enthusiastically experiencing and learning medicine comparable to that which he will later practise. We feel that one of the most important factors making this program more successful than similar but not identical programs in other schools is the fact that the student is allowed to assume supervised but full responsibility for the medical care of his family. If the student is permitted to be only an observer of the patient and his environment, as his medical knowledge increases and family respect and confidence in him enlarges, when true medical situations occur within the family both become frustrated because the student is not permitted to function as a truly helpful physician. The doctor-patient relationship suffers to the point of being detrimental rather than helpful. The student be-

comes disinterested and the whole stimulus for actively learning family medicine or patient-oriented medicine is lost. The situation becomes devoid of training value. This is the reason that we have given the student in our General Practice Department the opportunity of diagnosing his patients and treating them through home, office, and hospital arrangements.

Our Department of General Practice is staffed entirely by general practitioners who hold appointments on the university faculty. The department is completely autonomous, having its own physical plant as well as curricular schedule and student allotment. All courses offered by the department are required for graduation. The staff of the department is made up of two full-time faculty members and 35 part-time visiting staff members. Also the staff includes a departmental secretary, a medical-social service worker, and a laboratory technician. The department's function is to supplement, not replace, the specialty teachings. With a General Practice Department within the medical school, and the general practitioner having faculty appointments, the student views general practice as a worthy and respectable field of medical endeavour. The student who elects to be a general practitioner recognizes the qualified general practitioner as a member of the profession, respected by his medical school, as one qualified to teach and hold faculty appointments along with his specialist colleagues.

The teaching functions of the Department of General Practice are designed to help the student to know the background of disease through observation of his patients for a full year in their natural family and home environment. He has the opportunity to correlate his technical and scientific knowledge of medicine with the natural setting of illness and to evaluate the emotional and behaviour problems of both children and adults from the excellent vantage point of the family surroundings, which he comes to know well. He learns through both observation and experience the many factors that have a part in the production of disease and the retarding of healing.

COMMITTEE ON RESEARCH COLLEGE OF GENERAL PRACTICE



THE COMMITTEE on Research of the College of General Practice of Canada thanks the many doctors across the country who have, on previous appeals, signified their willingness to help in proposed surveys. Many more doctors will be needed if the College is to proceed with the very worthwhile projects it is contemplating. Doctors who feel that they can spare a few minutes now and then to help with gathering statistics, etc., are urgently asked to fill in the accompanying form and mail it to The Committee on Research, c/o Dr. E. S. Jeffery, Suite 304, 450 Central Avenue, London, Ontario.

**The Committee on Research,
College of General Practice of Canada,
c/o Dr. E. S. Jeffery,
Suite 304,
450 Central Avenue,
London, Ontario.**

I, Doctor.....

Address

engaged primarily in a (1) Rural..... (2) Urban.....

type of practice, hereby signify my willingness to help in certain medical statistical surveys,
although I am primarily interested in the subject of:

Date....., 1958.

POSTGRADUATE COURSES

Title of Course	Location	Dates	Fees
CANADA:			
Second Scientific Convention, College of General Practice of Canada	Royal Alexandra Hotel, Winnipeg, Man.	April 14-16, 1958	
Canadian Medical Association, Annual Meeting	Halifax, N.S.	June 16-20, 1958	
BRITISH COLUMBIA:			
6th Scientific Session, Section of General Practice	Harrison Hot Springs	March 20-22, 1958	
Postgraduate Course in Obstetrics and Gynaecology	Vancouver General Hospital	March 24-26, 1958	
ONTARIO:			
Clinical Day, General Practice Section, Hamilton	Hamilton	April 30, 1958	
Review Lectures in Medicine	Women's College Hospital, Toronto	First and last Monday evening of each winter month	
Minor and Emergency Surgery with demonstrations	General Practice Department of New Mount Sinai Hospital, Toronto	9-10 a.m. each Friday— March 14—May 9	
7th Annual Refresher Course Ontario Medical Association, Annual Convention	Ottawa Civic Hospital Royal York Hotel, Toronto	April 30, May 1 and 2 May 12-16, 1958	
QUEBEC:			
General Practitioner Course	Montreal General Hospital and Montreal Children's Hospital; Dr. Wm. Storrar, Registrar.	March 17-22, 1958	\$75.00 \$50.00
Quebec Chapter Convention	Chicoutimi	June 9-11, 1958	Combined \$100.00
U.S.A.:			
National Assembly, American Academy of General Practice	Dallas, Texas	March 24-27, 1958	
Michigan State Medical Society, Refresher Course	Michigan Clinical Institute, Sheraton-Cadillac Hotel, Detroit	March 19-21, 1958	
Cook County Graduate School of Medicine (707 South Wood St., Chicago 12, Ill.) and the New York Polyclinic Medical School and Hospital (345 West 50th St., New York) have a wide range of concentrated courses.			
BAHAMAS:			
5th Bahamas Medical Conference	Write to: Dr. B. L. Frank, Dolphin Hotel, Nassau, Bahamas	April 1-12, 1958	
6th Bahamas Medical Conference		December 1-15, 1958	

MEDICAL ECONOMICS

* ACCOUNTING FOR DOCTORS*

EDWIN A. JARRETT, F.C.A., *Toronto*

THE AVERAGE medical doctor practising alone, or in partnership with others, is fully occupied in the extensive use of his professional knowledge and skill and seems frequently to have too little time to devote to the financial side of his practice. Important as are the services rendered to his patients, equally important to him is the proper accounting for such service. For this purpose, it is desirable to choose office assistants who have knowledge of accounting as well as medical experience. The accounting end is too often looked on as a necessary nuisance rather than a vital part of the conduct of the practice. Success of the doctor may partly depend on the attention given to the financial side of his business.

For a proper accounting of the financial transactions of a medical practice, the following books are usually used:

1. Patients' appointment or day book (to record all appointments).
2. Patients' charge record, which may be combined with the patients' appointment book.
3. Patient's ledger (usually in card form).
4. Cash receipt books.
5. Cheque disbursement record.
6. Petty cash book.
7. Journal.
8. General ledger.

PATIENTS' APPOINTMENT OR DAY BOOK

The doctor has a service to give, and a record thereof is fundamentally essential. A day book that records the calls made on patients and by patients to the doctor's office is the foundation of the financial records as well as being essential to the medical history of each patient. The day book is not complicated and may be either bound or loose-leaf, with one record for office calls by patients and another for calls at the hospital or home of the patient by the doctor. A combined appointment day book and patients' charge record is practical. It may have headings as shown below.

DAY BOOK				
DATE				
Time	Name of patient	Remarks	Charge	Posted
9.30	Mrs. J. Brown	Prescription given	5.00	x

If the doctor supplies drugs to his patients, a separate column should be used to record the charge for such drugs.

If there are several doctors practising together a day book can be kept for each doctor.

The office accountant should record the charge for each call either in the appointment day book or on a separate charge record.

*This article is reprinted from the February 1953 issue of *The Canadian Chartered Accountant*, by kind permission of the publishers, the Canadian Institute of Chartered Accountants.

PATIENTS' CARDS

An individual ledger card should be kept for each patient's account. This card, in addition to showing the patient's name, address, telephone number and date of attendance, may include a brief statement of the diagnosis and procedure. It will, of course, be supported in most cases by a much more detailed separate clinical record of the patient.

The patient's card records the charge for each call or procedure posted from the charge book, plus the charge for drugs supplied (if any) or prescriptions given. The cash received is posted from the cash receipts book, and the balance owing by the patient recorded after each entry.

These cards are available from the stationers in standard form but should have columns for charges, cash receipts and balance due.

With the large increase in medical care insurance, it is important that particulars of the coverage be shown on the patient's card, giving such information as:

Identification number
Name of paying agency
Degree of coverage.

Accounts with each agency must be kept separately and the details of the charges shown thereon. The credit is made to the patient's account, and transferred to the account with the paying agency. The paying agency's account requires the following information:

Date
Name of patient
Identification
Procedure
Total amount of bill
Amount claimed.

To this would be added such additional information as is essential to the payment of the claim.

CONTROL ACCOUNT

A control account of the outstanding unpaid patients' fees, not always kept by most practitioners, can be most important to a medical practice. It is possible that a considerable amount of revenue may be lost to the doctor without such a control.

It is comparatively easy to set up a system of control of patients' accounts. The total of the charges to patients from the appointment (day) book or charge book would be entered in a summary record each day, and such total at the end of the month charged to the patients' control account in the general ledger (representing the charges to each individual patient in the months as shown in the patients' cards). The total receipts from patients for the month as shown by the cash receipts book would be posted to the credit of the control account. The net balance represents the patients' unpaid accounts.

Adjustments in patients' fees including items written off as uncollectable should be made in the journal.

Even in an individual practice the time required by a doctor's bookkeeper to control and balance the patients' cards is well worthwhile.

BILLING PROCEDURES

The regular billing of patients for services rendered is important to the doctor as well as to the patients. Delay in sending out bills may result in considerable loss

to a medical practice. The patient may move away and his forwarding address is not available or is too far away to follow up. The patient or the family supporter may die or lose his job, with the result that there may be no available funds to pay the bills.

In some special cases of a patient's illness where treatment leads up to an operation, it may be desired to withhold rendering the bill until the operation has been completed. If desired, such bills can be withheld but with machine accounting the bills would be completed the first of each month and ready to forward to the patients. Those being withheld can be added to with the following month's charges until the desired time to forward the account to the patient.

Since most medical practices operate their financial accounting on a cash basis, if the patients' fees are entered as billed for a control of accounts receivable, then at each year end the total of the patients' unpaid accounts as shown by the control account balance (and agreed with the individual list of patients' unpaid accounts) would be deducted from the year's revenue and offset against the accounts receivable as shown in the balance sheet. The entry would be reversed at the beginning of the year.

CASH RECEIPTS

The recording of cash received is also important. To assure the correct and full accounting, all cash receipts should be recorded in a cash receipts record and deposited in the bank regularly (preferably daily). No disbursements should be made from cash receipts. Full details of all receipts showing the name of the patient, amount paid, exchange charged and the net deposit could be recorded in the cash receipts book. However, the use of duplicate deposit slips on which full information is recorded and properly filed supporting the entry in the cash book may save some of the office accountant's time. The totals of the patients' payments, exchange charged and the net deposit only would be recorded in the cash books.

DISBURSEMENTS

All disbursements should be by cheque, numbered and recorded in a disbursing cheque record.

This record should be in columnar form so that the distribution may be totalled monthly and posted in total to the proper account in the general ledger. A book of 10 to 15 columns as required should be used for this purpose. The columns might be headed:

- Date
- Payee
- Cheque No.
- Amount of cheque
- Salaries—Assistant doctors (if any on salary)
 - Nurses
 - Office receptionist and bookkeepers
- Fees of other assistant doctors
- Medical and surgical supplies
- Laboratory fees
- Laundry—Cleaning and general expenses
- Automobile expenses (if chargeable to medical practice)
- Postage and stationery
- Office supplies and expenses
- Telephone and telegraph

Proprietor or partners' drawings (a column for each partner's drawings would be useful)

Sundry items (to be posted individually to different ledger expense and other accounts).

PETTY CASH

An office petty cash fund on the usual imprest system is, of course, necessary. The reimbursements by cheque covering exact outlays would keep the office petty cash up to the required sum—\$50 or \$100. The distribution of the relative expenditures could be recorded in the cheque disbursement book when the reimbursing cheque is issued.

However, the accounting for cash disbursements by the doctors themselves is one of the big problems of a medical practice. Often the doctors are too busy (and not sufficiently aware of the importance) to keep track of all their cash outlays. With high income taxes, the importance of accounting for all outlays is apparent.

If the doctors must pay out cash for sundry items, they should present as soon as possible a proper voucher to the office accountant for reimbursement from the office petty cash, or have a cheque issued to the doctor to reimburse him for his payment.

OFFICE EXPENSES

If a doctor's office is in his home, it is necessary to allocate for income tax purposes the expenses of maintaining the building between the medical practice and the personal use of his home. This is usually done by taking a percentage of the costs of maintenance of the property according to the space used by the medical practice (such as office, laboratory, waiting room, study, etc.), having in mind that often a more pretentious building may be required, with larger grounds, say on a corner, than would be necessary for just personal living quarters.

If it is decided that one-third of the costs of the property would be a reasonable charge for the medical practice, one-third of the expenses of maintenance and carrying the property could be allocated to the practice. (See pro forma statement on page 440.)

AUTOMOBILE EXPENSES

The operation of an automobile is usually an essential part of the cost of earning the income of a doctor's medical practice. If a doctor is operating a practice on his own and has one car which he also uses for personal purposes, then a portion of the car expense must be considered, for income tax purposes, as personal use and not chargeable to the medical practice.

If 25% is considered as the personal use of the automobile, then the total expenses should be reported and 25% deducted therefrom for personal use. (See pro forma statement.)

If two cars are used, one for the medical practice and one for family or personal use, it may be that all the expenses of the car used for the medical practice would be allowed as an expense of the practice, but the costs of the operation of the second car would be disallowed.

GENERAL JOURNAL AND LEDGER

The proper accounting of the current assets (including the patients' accounts receivable control), equipment and other fixed assets, capital and operations of a medical practice requires the use of a general ledger

and journal. This, of course, is most important where doctors are practising as partners.

Too frequently the individual practitioner uses his annual income tax returns as the only record of his fixed assets.

GENERAL

The keeping of proper records generally may not be too difficult a problem if care is taken in selection of adequately trained staff for the office. Any extra expense required for good bookkeeping may be more than offset by the saving in revenue for the medical practice. A dollar saved is a dollar earned and good accounting saves dollars.

DR. X
PRO-FORMA PROFIT ON MEDICAL PRACTICE
For the year ended 31 December 1955

REVENUE:		
Medical fees received in year (Cash Basis) (say).....	\$34,850.00	
EXPENDITURES:		
<i>Professional services and supplies:</i>		
Salary of assistant doctor.....	\$3,000.00	
Other consulting doctors' fees.....	1,000.00	
Nurse's salary.....	2,000.00	
Medical and surgical supplies..	1,050.00	
Laboratory fees.....	200.00	
Insurance on instruments and medical equipment.....	50.00	
Laundry, linen, cleaning and miscellaneous medical expenses.....	1,200.00	\$8,500.00
<i>Instruments and medical apparatus:</i>		
Instruments purchased during year at cost not exceeding \$50 each.....	\$ 150.00	
Depreciation of instruments and medical apparatus at rate of 20% of net depreciated balance at end of year—say 20% of \$1,000.....	200.00	350.00
<i>Building maintenance and operation:</i>		
If medical premises rented—rent paid—say downtown office.....	\$ 800.00	
If premises owned by doctor and used both for practice and residence:		
Building maintenance and repairs	\$400.00	
Supply detail of larger items—(Includes repairs, painting and upkeep of building, gardener, furnace help, window cleaning, etc.)		
Fire insurance on buildings.....	60.00	
Fuel for heating premises (paid basis).....	300.00	
(Not usual to consider any inventories on hand at beginning or end of year)		
Light, water and power.....	200.00	
Municipal real estate taxes for year (Business tax is a direct charge to practice).....	340.00	
Depreciation of building (If brick building 5% of net depreciated cost).....	800.00	
Interest paid on mortgage on property.....	300.00	
	\$2,400.00	

Less: Allowance for portion of house occupied by doctor's family. (Should be a reasonable portion of total value of premises) say 1/3 according to space used.....	800.00	1,600.00	2,400.00
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<i>Office and administration expense:</i>		
Salaries of clerical office staff..	\$3,000.00	
Audit and legal fees.....	200.00	
Municipal business taxes.....	150.00	
Office supplies, stationery and expense.....	400.00	
Medical books.....	70.00	
Medical association fees.....	100.00	
Medical convention expense...	200.00	
Interest paid on funds borrowed to finance medical practice.....	100.00	
Magazines and periodicals....	50.00	
Postage and excise stamps....	350.00	
Telephone and telegraph.....	400.00	
Unemployment insurance.....	100.00	
Malpractice insurance.....	50.00	
Depreciation of office furniture—20% of net depreciated cost.....	130.00	5,300.00

<i>Transportation:</i>		
<i>Automobile expenses:</i>		
Gas and oil.....	\$550.00	
Repairs.....	200.00	
Insurance.....	90.00	
Licence.....	25.00	
Tires.....	85.00	
Depreciation (30% of net depreciated cost).....	650.00	
	\$1,600.00	
Less: Say 25% for personal use.....	400.00	1,200.00
Total expenditures.....		17,750.00
Profit for year from medical practice.....		\$17,100.00

NOTES RE PRO-FORMA PROFIT AND LOSS ACCOUNT

1. All salaries should be supported by the T4 return of wages and salaries filed by February 28 for the previous year.
2. All expenditures should have available for support, if required, invoices from creditors, tax bills or other satisfactory vouchers covering such expenditures.
3. Depreciation allowance is based on the net depreciated cost—the cost of the fixed asset less the accumulated depreciation (or capital cost allowance) allowed thereon by the Income Tax Department to the end of the previous year.

An example of automobile depreciation allowances follows:		
Undepreciated capital cost 31 December, 1954.....		\$1,667.00
Car purchased 1955—Cost.....	\$2,700.00	
Allowance for old car.....	2,200.00	
Cash outlay.....		500.00
Depreciation at 30% (capital cost allowance).....		\$2,167.00
		650.00
Undepreciated capital cost 31 December, 1955.....		\$1,517.00
1956 depreciation claim would be 30% of \$1,517 or..		455.10
Leaving the undepreciated capital cost at 31 December, 1956.....		\$1,061.90

4. Convention expenses are allowed up to two medical conventions anywhere and should be supported by air or train tickets and hotel bills. (If the doctor's wife went along, her share of the hotel bill and cost of her train or air ticket should not be claimed as an expense of the medical practice). If the doctor uses his own car, his travelling expenses will be covered in his claim for over-all business use of the car.

THE CANADIAN MEDICAL RETIREMENT SAVINGS PLAN

This is the first quarterly report on C.M.R.S.P. activities. In this instance it is also a year-end report since contributions to be eligible for tax deferment on 1957 income are required to be in the hands of our agents, the Bank of Montreal, by February 9, 1958.

We are pleased that 1757 physicians registered their applications during 1957. Of this number 1587 actually made contributions in a total amount exceeding \$1,920,000. For the first quarter ending November 9, 1957, contributions totalled \$61,400—\$21,218.10 to the insured annuity fund and \$40,181.90 to the common stock fund; contributions during the second quarter deposited to February 9, 1958, totalled \$1,863,131.19—\$717,197.78 to the insured fund and \$1,145,933.41 to the common stock fund.

The Insured Annuity Fund

The rate of interest allowed on the insured element of C.M.R.S.P. has been raised to 4.50% for the period March 1, 1958-February 28, 1959. The rate actually credited during the quarterly period December 1, 1957-February 28, 1958, was 4.25%.

This increase reflects a rise in the net interest earnings of The National Life Assurance Company of Canada since C.M.R.S.P. went into effect. Changes in the rate credited to members' funds may be expected from year to year, although the minimum can not, under the terms of the contract, fall below 3.5%. Our annuity contract with National Life is a participating one and the current situation demonstrates how advantageous this is.

If you are a participant in C.M.R.S.P., or if you contemplate joining the Plan, you may be interested to see what effect the higher interest rate, if maintained, would have on the annuity purchased. The table printed on page 455 shows the relevant figures.

The Common Stock Fund

On December 1 the value of each unit in the common stock fund was \$10.00. Contributions made during November totalled \$40,181.90. These contributions purchased 4018.19 units in the fund.

The holdings of the fund were valued on February 28, 1958, in order to determine the unit value applicable as of the first quarterly valuation date. The valuation statement is printed in the adjoining column for your information. From this statement the unit value was determined to be \$10.21. Contributions made to the common stock fund during the last three months will purchase units at this rate.

Statements and Income Tax Receipts

During the month of March each participant will receive a detailed statement setting out the amount and allocation of his contribution. The income tax receipt forms part of the statement and can be detached and filed with your income tax return.

If you have not received your statement prior to March 31, please notify this office immediately in order that we may provide a duplicate receipt.

Trusteeship Committee

On March 1 the Trusteeship Committee met with officials of the Royal Trust Company to establish policy with respect to the investment of more than \$1,140,000 recently contributed to the common stock plan.

The Committee was pleased with the results obtained during the first quarter and commended our fund managers on the timing of their purchases. The value of each unit rose from \$10.00 on December 1 to \$10.21 on February 28, even though the market as a whole made no appreciable advance.

It was agreed that the amount of recent contributions would be invested over a period of six months in order to carry out the principle of dollar averaging. A broad representative list of stocks was approved for investment in order to provide necessary diversification. During the first three months emphasis will be placed on certain issues which seem reasonably priced at this time and purchases of other issues will be delayed until the effect of present economic conditions is reflected in market prices.

More Information in C. M. A. J.

The Committee decided that information of particular interest to participants would be published in the *Canadian Medical Association Journal* four times each year—issues of March 15, June 15, September 15 and December 15. These issues immediately follow each of the four common stock fund quarterly valuation dates and it is intended to publish details of the portfolio held by the fund.

In addition to these statements of stock holdings, we will use these issues to report the progress of the insured annuity fund and other information of interest to participants.

Notice to Non-Participants

If you wish to obtain more information about C.M.R.S.P. please write to the Association office at 150 St. George Street, Toronto. Brochures and other informative literature is available on request. The basic outline of C.M.R.S.P. is simple and extremely flexible and participation will enable you to obtain tax relief now on savings which you invest to provide retirement income.

CANADIAN MEDICAL RETIREMENT SAVINGS PLAN COMMON STOCK FUND

<i>Holdings Valued at Closing Prices, February 28, 1958</i>		
<i>No. of Shares</i>	<i>Description</i>	<i>February 28, 1958 Value</i>
100	Aluminum Limited, Capital Stock	\$2,662.50
100	Bank of Montreal, Capital Stock	4,075.00
100	Bell Telephone Co. of Canada, Capital Stock	4,175.00
100	Building Products Limited, Common Stock	3,875.00
100	Consolidated Paper Corp. Limited, Capital Stock	3,050.00
50	Gatineau Power Co. Limited Common Stock	1,575.00
50	Interprovincial Pipe Line Co. Common Stock	2,050.00
50	Moore Corporation Limited, Common Stock	3,325.00
100	Powell River Company Limited, Common Stock	3,125.00

(Continued on page 455)

A Message to the Members from the President-Elect

IT IS WITH SINCERE anticipation that we of the Atlantic Provinces prepare to welcome you to the 91st Annual Meeting of the Canadian Medical Association. Your host, the New Brunswick Division, has chosen the historic city of Halifax to be our place of meeting, June 16 to 20, 1958. Plans are well advanced for an outstanding scientific and social meeting.

We are pleased to announce that colour television will be shown for the first two and one-half days. The sessions and sections of the scientific program have been filled by eminent doctors, and already several prominent Atlantic Province speakers have consented to be present at our luncheons.

The entertainment, with the generous assistance of the Province of New Brunswick and the hearty co-operation of Nova Scotia, Prince Edward Island, and Newfoundland, promises to have a genuine "down east" flavour including plenty of lobster, boating, square dancing, and scenic drives around Halifax.

Visitors to the Atlantic Provinces in June have a rare treat in store for them. Not only have we the scenic beauty of our rugged coast-line, but inland, at this time of the year, the lush green of our rolling hillsides, dotted with lakes and lined with majestic rivers, makes a panorama of tranquil loveliness to be remembered forever.

We shall indeed be pleased to welcome you to our maritime meeting.

Arthur F. Van Wart
President-Elect.



ARTHUR F. VanWART
President-Elect
Canadian Medical Association

HOUSING APPLICATION FORM

91st Annual Meeting, C.M.A.**Halifax, June 16 - 20, 1958**

Dr. M. R. Macdonald,
Chairman, Committee on Housing, C.M.A.
30 Armshore Drive,
Armdale, Halifax, N.S.

Please reserve the following accommodation:

..... Double room (bath or shower) twin beds double bed.....

..... Room for person(s) (bath or shower)

..... Motel Unit for persons (bath or shower)

..... Tourist Home for persons

In view of the large attendance expected, the hotels have few, if any, single rooms available. It might be to your advantage to share a room with another member. Please mention below the name of the person with whom you would like to share your accommodation; otherwise assignment will be made by the Housing Committee.

Names of persons who will occupy the accommodation requested above:

NAMES (Dr. and Mrs.)

ADDRESSES

I (we) will arrive in Halifax on June..... at a.m.
p.m.

I (we) will depart from Halifax on June..... at a.m.
p.m.

Travelling by: Automobile..... Train..... Air..... Bus.....

Please check choice of accommodation: First Second Third

Hotel

Motel

Tourist Home

NAME

ADDRESS

TELEPHONE No.....

THIS WILL CONSTITUTE YOUR ADVANCE REGISTRATION FOR THE MEETING

Association Notes

EXECUTIVE COMMITTEE

The Executive Committee of the Canadian Medical Association met at C.M.A. House, Toronto, on February 14 and 15, with Dr. N. H. Gosse of Halifax in the chair. In addition to the members of the Committee, Dr. K. S. Thomson, the chairman of the Committee on Economics, was present, and Dr. Haig, the president of the Alberta Division, was present as observer.

ADVISORY COMMITTEE TO FEDERAL GOVERNMENT

The Executive Committee heard that the Advisory Committee of the C.M.A. to the Federal Government met with the Minister of National Health and Welfare on November 4, 1957, and discussed the draft regulations to Bill 320 which were then being prepared. It emphasized to the Minister the distinction between physicians' services in the diagnostic field and the routine hospital services, and expressed concern at the possibly adverse effect on medical education of universal hospital insurance. The Committee told the Minister that they felt that a more adequate definition of "diagnostic services" might be advisable and that a clearer designation of "other facilities" might be important when out-patient services were contemplated in any province. There was also a need for emphasizing the distinction between administrative handling of teaching hospitals and management of other hospitals. The meeting was cordial and the Advisory Committee of the C.M.A. left with the feeling that they had succeeded in explaining points of view to the Government. At subsequent discussions in January with representatives of Government, it seemed to the C.M.A. that their views had not been given sufficient weight in the legislative enactments, although Government representatives stated that the views of the profession had been presented to the most recent Dominion-Provincial technical conference, and that the Minister felt that provincial administrations were cognisant of the profession's areas of concern.

There was prolonged discussion in the Executive Committee of these points and it was finally decided to send a communication to the Minister of National Health and Welfare in the following terms:

February 17, 1958

The Honourable J. Waldo Monteith,
Minister of National Health and Welfare,
OTTAWA, Ontario.

Dear Mr. Monteith:

The Executive Committee of this Association met on February 14th and 15th to hear the report of the Advisory Committee, which met you on November 4th, and to learn of my subsequent conversations with you and your officials relative to Bill 320 and its regulations. Disappointment was expressed at our inability to achieve any modification of the Bill or its regulations, to incorporate those considerations which were the subject of our representations to you. Our contacts with the provinces suggest that extreme variation in the handling of the medical aspects of the situation will result unless the federal instruments give clearer directives.

The views of my Executive Committee are expressed in the following preamble and resolution:

"The Canadian Medical Association is continuously concerned about the quality of medical care that is, and is to be, supplied to the people of Canada. With this responsibility in mind, The Canadian Medical Association now wishes to express to you certain serious misgivings respect-

ing Bill 320. The Association has no assurance, and now expresses serious doubts, that the present standards of medical care in Canada can be adequately maintained and developed under the terms of this Act, unless certain medical services are more specifically defined and more specifically provided.

The Executive of The Association has passed the following motion for your information and guidance.

"Motion re 'Bill 320' which is officially described as 'An Act to Authorize Contributions by Canada in respect of Programmes Administered by the Provinces, Providing Hospital Insurance and Laboratory and Other Services in Aid of Diagnosis.'

WHEREAS,

1. The proposed 'Laboratory and Other Services in Aid of Diagnosis' entail provision for physicians' services.
2. The Bill does not include any definition of physicians' services or particulars thereof.
3. The term 'Other Services in Aid of Diagnosis' could be interpreted to cover all the activities of doctors in medical practice apart from actual therapy.
4. There is need to clearly provide specific administrative arrangements for physicians' services in contrast to hospital services.
5. These deficiencies of the Act will lead to confusion and inefficiency when the Act is implemented in the various provinces.
6. These matters have been discussed by Canadian Medical Association representatives with representatives of the present and immediately preceding federal governments.

BE IT NOW RESOLVED that the importance and urgency of clarifying the provisions of Bill 320 in respect to medical services be brought to the attention of the Government of Canada."

Your assurances that these considerations will be made the subject of amendments to the legislation and/or regulations will be appreciated.

Yours sincerely,

ADK:MR

General Secretary

The Executive Committee also considered and discussed a resolution from the Canadian Paediatric Society's Committee on Education in which concern was expressed at the possible repercussions of universal hospital insurance on the supply of patients in university teaching hospitals. The C.M.A. and its divisions were urged at national and provincial levels to impress upon the Government the need for adequate numbers of beds for teaching purposes.

The Committee then considered matters concerned with the Department of Veterans' Affairs. It has previously been reported that after the last meeting of the Executive Committee a mail ballot was circulated to members of the Committee on the application of provincial fee schedules to D.V.A., and that this ballot secured the required majority in favour of the application by D.V.A. of provincial fee schedules throughout Canada with a 10% discount. These arrangements were effective on January 1, 1958, and D.V.A. had modified its position to the extent that it no longer required provincial medical societies to stabilize their fee schedules and promised to pay on the basis of any new fee schedules introduced within the Departmental estimation of available finances. D.V.A. was also prepared to disregard its own boundaries and use the provincial boundaries for purposes of computing fees.

The New Brunswick representative pointed out that because the New Brunswick fee schedule was comparatively low, the new rate would mean that New Brunswick doctors were paid actually less than they had previously received under the old D.V.A. schedule. It was decided that the hardships of applying this new schedule to New Brunswick should be pointed out to the D.V.A. authorities but that this circumstance

should not affect the validity of a contract made on behalf of the whole profession.

It was also agreed that the fee schedule for the Sick Mariners' Service should be paid in accordance with the new D.V.A. arrangement, provided that this would not reduce payments in any province below their present levels.

REPORT OF THE HONORARY TREASURER

The Honorary Treasurer, Dr. G. Halpenny of Montreal, read his report for the year 1957. This showed that the assets of the C.M.A. stood as of December 31, 1957, at \$727,000 and that there was an excess revenue over expenditure for the year 1957 of \$52,000. The reports of the Honorary Treasurer and of the auditors were adopted.

REPORT OF THE EDITOR

The Editor reported that there were no major changes in the production of the *Canadian Medical Association Journal*, except that certain type changes and increase in the length of column and reduction in margins had been adopted in January 1, 1958, so as to utilize the pages of the Journal more economically. The Editor also reported that the time-lag before publication, which had caused concern in recent years, had now been reduced to a reasonable period. He reported that two special numbers were being prepared, an educational number for April 1 and a number on hospital insurance problems for May 15.

He also reported on the publication of the *Canadian Journal of Surgery*, and pointed out the need to obtain continued support from the surgeons of Canada in the matter of contributions to its pages.

REPORT OF THE MANAGING EDITOR

The Managing Editor reported that the operation of the Journal in 1957 had showed a profit, but that this was somewhat lower than in 1956 because of increased costs of production. He noted that the "trade" (i.e., the advertisers, printers and agents) had commented very favourably upon the makeup and general appearance of the new *Canadian Journal of Surgery*, and that it was hoped that the Journal of Surgery might carry itself eventually. He also recommended to the Executive Committee that they rule out January 1, 1959, as a starting date for the launching of a weekly *Canadian Medical Association Journal*, and that they defer a decision until such time as the business outlook in Canada could be more clearly defined.

PUBLIC RELATIONS

The new assistant secretary of the Canadian Medical Association in charge of public relations, Mr. Kenneth C. Cross, ex-director of public relations for the Ontario Hospital Association and Blue Cross, was introduced to the Executive Committee. Mr. Cross called the attention of the Committee to various activities in public relations, including the recent production of a brochure on postgraduate awards and scholarships. He reported that arrangements are now being completed with the Bell Telephone Company of Canada to put a project into effect whereby each telephone directory would carry an emergency medical service call number, manned 24 hours a day seven days a week. Such emergency

medical call listings would be made at the request of local medical societies, and it was hoped that the Bell Telephone Company would inform other telephone companies in Canada, so that eventually there would be a uniform listing throughout the country. There was also some discussion of the problems associated with recruitment of medical students and it was decided to pursue methods of attracting adequate numbers of bright students to the study of medicine.

* COMMITTEE ON BY-LAWS

Dr. Max Klotz of Ottawa, chairman of the Committee on By-Laws, introduced a report of the Nucleus Committee on By-Laws with particular reference to amendments of such chapters of the by-laws dealing with sections, in which some confusion has arisen because some sections are scientific, some for business purposes and some mixed; senior memberships; organization of General Council. It was agreed to increase the number of senior memberships each year from 11 to 18, on a scale for each division commensurate with its membership. It was also agreed that the Director General, Joint Medical Services, Department of National Defence, be asked to represent the Armed Forces as a member of Council.

Certain amendments to the C.M.A. Act of Incorporation had also been under study by the Committee on By-Laws and were considered by the Executive Committee. A suggested amended list of objects of the Canadian Medical Association was approved in principle, subject to scrutiny by the Association's solicitor.

HOSPITAL ACCREDITATION

It was reported that, in furtherance of the plan to establish an all-Canadian program for accreditation of hospitals in Canada, the Canadian Commission on Hospital Accreditation had decided to seek corporate status under Federal Law, under the name of the *Canadian Council on Hospital Accreditation*. This proposition was approved.

CANADIAN MEDICAL RETIREMENT SAVINGS PLAN

Mr. B. E. Freamo, assistant secretary, C.M.A., reported a gratifying situation with the Canadian Medical Retirement Savings Plan. A large number of applications had been received during the latter part of December and had substantially increased enrolment from 362 on October 26 to 1762 on December 31. This was particularly gratifying because reports indicated that other individual and group arrangements had not achieved the success they sought. At its next meeting, the Trusteeship Committee of the C.M.A. would establish policy as to the entrustment of the sums of money already obtained. Mr. Freamo also noted that other organizations had used C.M.R.S.P. as a model in developing their own program. He mentioned that the interest rate on the insured annuity had been increased to 4% for the period March 1, 1958-February 28, 1959. An analysis of the participants by divisions was given; this showed that Newfoundland had already enrolled 27.2% of its C.M.A. members in the Plan. After the meetings of the Trusteeship Committee, announcements will appear in the Journal (the first of which is on page 441 of this issue) and it is expected to repeat such information quarterly.

ECONOMICS

Four subjects were discussed under the heading of "Economics". The first was the consideration of the new Children's Health Service in Newfoundland, Phase II, recently introduced. This is referred to in detail in our Newfoundland news and notes (p. 458). The second referred to the studies in arbitration which have been referred to the C.M.A. Committee on Economics. The third item concerned an interim report on the relative value studies which have been begun in order to establish a schedule of relative values for medical procedures. The tentative system established by Mr. Freamo was explained to the Committee. It included for each procedure, factors in establishing diagnosis, factors involved in treatment, and time factors. Under the heading of "Diagnosis", each procedure would be analyzed as to the extent of physical examination required, the degree of the physician's education required to establish diagnosis, and the degree of judgment required in diagnosis. Under "Treatment" were listed: judgment required to select the specific method of treatment, skill required to carry it out, education required to perform the procedure, and the likelihood of disability to the patient from common complications. Lastly, Dr. M. R. MacCharles of Winnipeg attended the meeting of the Executive Committee with Mr. Howard Shillington of T.C.M.P. to report progress by the special committee appointed by the Commission of Trans-Canada Medical Plans to investigate the merits of establishing a national underwriting agency. Dr. MacCharles explained the recommendations that his committee was making for the establishment of such an underwriting medium, and his report was referred to the C.M.A. Committee on Economics for further study.

WORLD MEDICAL ASSOCIATION

At its last meeting, the Executive Committee of the C.M.A. established a subcommittee to make recommendations for the further participation of the C.M.A. in the work of the World Medical Association. The following recommendations, brought in by this subcommittee, were adopted by the Executive. Two delegates should be sent by the C.M.A. to each General Assembly of the W.M.A., and in order that greater continuity might be obtained, a three-year term should be set for delegates with staggered appointments. Delegates appointed must have a clear understanding of the philosophy and viewpoints of the Canadian Medical Association through work on its Executive Committee. They should be prepared to accept offices in W.M.A. and to seek election to its Council at appropriate times. Further attempts should be made to have C.M.A. representation on the Canadian delegation to WHO and to establish liaison between the delegates to WHO and W.M.A. Delegates to the fourth General Assembly of W.M.A. in Copenhagen in August 1958 will be Dr. Norman H. Gosse and Dr. A. D. Kelly. Dr. Léon Gérin-Lajoie of Montreal has accepted nomination as president-elect for the Assembly to be held in Montreal in September 1959. Arrangements for this Assembly and also for the Second World Congress in Medical Education are being made. The Canadian Supporting Committee to the W.M.A. will defray expenses of Canadian speakers appointed to this second world conference.

91ST ANNUAL MEETING, HALIFAX, JUNE 16-20, 1958

Arrangements for this meeting were discussed. The scientific program is complete and the social program is also finalized. The four premiers of the Atlantic Provinces will be speaking at the four official luncheons. In connection with this meeting, the delegate from New Brunswick proposed that senior members who are unable to attend the annual meeting of the C.M.A. should have their senior membership conferred on them by the president at the annual meeting of their provincial division. This resolution was adopted.

92ND ANNUAL MEETING, EDINBURGH, JULY 18-24, 1959

The Executive Committee were informed that there were already 2500 persons on the books of our official travel agency, University Tours, Toronto. These consisted of 700 C.M.A. members and their families. It was therefore certain that there would be an accommodation problem in Edinburgh, and any members who had failed to get in touch with University Tours were urged to do so immediately. The program for this meeting is well in hand as far as Canadian participation is concerned, and it is expected that two of the Secretariat of the British Medical Association, Dr. E. R. C. Walker and Dr. Walter Hedgcock, will visit the C.M.A. annual meeting in Halifax this year to obtain further guidance for the joint meeting in Edinburgh.

C.M.A. HOUSE

The Executive Committee heard of the appointment of Messrs. Allward and Gouinlock, architects, who have been asked to assist with plans for enlargement of the premises at C.M.A. House. Certain restrictive zoning regulations are to be opposed at a forthcoming session of the Ontario Municipal Board.

PHYSICAL FITNESS

The president, Dr. Morley Young, reported an approach which had been made to him for C.M.A. support of a plan for a national body to promote the physical fitness of the Canadian people. This proposal was turned over to the Committee on Public Health of the C.M.A. for further study.

TRAFFIC ACCIDENT RESEARCH FOUNDATION

Dr. T. C. Routley reported proceedings of a meeting on February 13 at which officers and officials of the C.M.A. and members of the C.M.A. Committee on Traffic Accidents had met with representatives of the Canadian Highway Safety Conference, of the insurance world and of industry in order to discuss ways of financing the proposed Canadian Medical Traffic Accident Research Foundation. He brought in various proposals, particularly one which was adopted for a ways and means committee, centred in Montreal, to get in touch with the Canadian Highway Safety Conference and invite the latter to have a joint meeting and ask for appointments from the other body, so that a joint liaison committee of the two bodies might be formed. It would then be possible to seek a launching fund sufficient for basic research for one to two years. At the end of this time, it would be possible for the Foundation to delineate a future program, such that industry

would consider it sound and worthy of financial support.

OTHER ITEMS

Other items concerned the liaison committee of the C.M.A. with the Canadian Psychiatric Association, the liaison committee with the Royal College of Physicians and Surgeons of Canada, the Canadian Joint Committee on Nursing (the Canadian Conference on Nursing, which was discussed at this meeting, has already been referred to in *C. M. A. J.*, 77: 1138, 1957). The Executive Committee nominated Dr. Douglas Law of Ottawa as their representative on the Committee on Safety Code for Hospital Hazards of the Canadian Standards Association. It was agreed that the C.M.A. should accept the invitation to corporate membership of the Board of Trade of the City of Toronto. The possibility of establishing a memorial lecture to the late Sir Thomas Roddick is to be explored, and also the possibility of Canadian contributions to an Osler Room in the new building of the Royal College of Physicians of London.

REDUCED RAILWAY FARES FOR MEETINGS OF THE C.M.A. AND AFFILIATED MEDICAL SOCIETIES

Halifax, N.S., and St. Andrews, N.B.

Arrangements have been completed with the Canadian Passenger Association to permit members and their families to obtain reduced railway fares in travelling to and from the meetings of the Canadian Medical Association and/or affiliated medical societies in Halifax, N.S., and St. Andrews, N.B., in June 1958:

To Halifax: The Canadian Otolaryngological Society, the Canadian Ophthalmological Society, the Canadian Heart Association, the Canadian Academy of Allergy, the Canadian Rheumatism Association, the Canadian Medical Protective Association, the Canadian Association of Radiologists, and the Canadian Psychiatric Association.

To St. Andrews: The Canadian Pædiatric Society; the Society of Obstetricians and Gynæcologists of Canada.

Adult round-trip fares will be available for one and one-half times the normal one-way fare plus 25c. To secure reduced rates, members require a Round Trip Convention Certificate which can be obtained from the General Secretary of the C.M.A. or from the appropriate affiliated medical society.

The dates authorized for the start of the going journey will be as follows:

From stations on Western Lines (all points west of Fort William and Armstrong, Ont.): June 3-19 (inclusive), 1958.

From stations on Eastern Lines (Fort William and Armstrong, Ont., and all points east thereof, except Newfoundland): June 5-21 (inclusive).

From stations in Newfoundland: June 2-18 (inclusive).

This arrangement applies to both railways. A return limit of 30 days applies to these tickets.

MIDWINTER CONFERENCE OF DIVISIONAL SECRETARIES

The midwinter conference of the divisional secretaries of the C.M.A. took place in Vancouver on February 20, 21 and 22. Dr. Gordon Ferguson of the B.C. Division acted as host and had planned an elaborate program which included guest speakers from the Faculty of Commerce and Business Administration, University of British Columbia, and Management Research (Western) Limited. Topics covered were "Collective Bargaining" by Mr. R. Mahoney; "Personal Finance", by Professor L. J. Wong; "Automation in the Office" by Professor R. H. Heywood, and "The Canadian Economic Scene" by Professor G. G. Deutsch. The audience had the privilege of listening to Dean E. D. MacPhee, who spoke on the changing concepts of management.

The actual business session was held in the board room of the Academy of Medicine Building on February 21 and 22. Highlights of the topics discussed included medical economics, public relations, medical manpower and divisional annual meetings. The purpose of these secretaries' conferences is to allow an exchange of ideas between administrative officers of the Association in different provinces. It has been found in the past that problems shared by several Divisions are more easily solved if experiences are pooled and regional differences pointed out.

The B.C. hosts provided delightful social entertainment for their guests in the few moments of leisure left by a particularly heavy agenda.

MEDICAL SOCIETIES

WORLD MEDICAL ASSOCIATION

32ND COUNCIL SESSION

The Council of the World Medical Association will convene for its 32nd Session at La Confédération des Syndicats Médicaux Français, Paris, France, May 3-10, 1958. The deliberative Council Session, or mid-year meeting, receives reports on the various activities of the Association and determines the General Assembly agenda.

A special feature of this Session will be a joint meeting of members of the Executive Committee of the Syndicats Médicaux Français with the members of the Council to consider problems of mutual interest. Dr. J. Jonchères, President of the Confédération, will preside at this meeting.

XIIITH GENERAL ASSEMBLY

The XIIth General Assembly of the World Medical Association will be held at the Parliament House, Copenhagen, Denmark, August 15-20, 1958. Information on the program of this meeting will be available at the Secretariat of the World Medical Association, 10 Columbus Circle, New York 19, New York, in April or May.

THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA

The following candidates were successful in the
1957 Fellowship Examinations:

* MEDICINE (29)

Alexander Aronoff, Montreal; Jacques Baillargeon, Quebec; Robert William Bates, Toronto; John Edmund Bethune, Berwick, N.S.; Jean Paul Binette, Montreal; Jacques René Brunet, Quebec; Lucien Campeau, Montreal; John Beamish Dossetor, Montreal; Mircea Aron Enesco, Montreal; Geraint Thomas Griffith, Buffalo, N.Y.; Gerald David Hart, Scarborough, Ontario; Florence Marguerite Hill, Toronto; Douglas Gordon Kinnear, Boston, Mass.; Allan Knight, Westmount, Quebec; François Léger, Montreal; Susan Claire Lenkei, Toronto; Allison David Macdonald, Montreal; Frederick Graham Wall Marson, Ancaster, Ontario; Yves Morin, Quebec; Léo-Paul Pichette, Brookline, Mass.; Charles Armand Plamondon, Quebec; Joseph Robert Potvin, Quebec; William Lippincott Richards, Toronto; John Gates Robinson, Toronto; Philip Stanley Rosen, Toronto; Roy Rowsell, Oshawa, Ontario; Brian Jessup Sproule, Dallas 19, Texas; David Arnold Stinson, Toronto; Colin Rael Woolf, Toronto.

MEDICINE (ANÆSTHESIA) (2)

Alan William Conn, Toronto; Hugh Herbert McCartney, Vancouver.

MEDICINE (NEUROLOGY) (5)

Claude Bélanger, Quebec; Charles Dumas, Montreal; Gerald Walker Fitzgerald, Regina, Sask.; Joseph Thomas Marotta, Toronto; George Monckton, Edmonton, Alberta.

MEDICINE (PÆDIATRICS) (5)

Peter Alexander McFaul Auld, Boston, Mass.; Mimi Madelaine Belmonte, Montreal; James Edward Boone, Toronto; Robert Gourdeau, Montreal; James Andrew McKee, Toronto.

MEDICINE (PATHOLOGY) (2)

Chester Raymond McLean, Toronto; Harry Thomas Gordon Strawbridge, Winnipeg.

MEDICINE (PSYCHIATRY) (3)

David James Lewis, Toronto; William Robert Mitchell, Toronto; Gilles André Paul-Hus, Montreal.

GENERAL SURGERY (39)

James Kent Armstrong, Sault Ste. Marie, Ontario; Rémi Bouchard, Quebec; Morris Harry Broder, Winnipeg; Gordon Smith Cameron, Toronto; Francis Raymond Coughlin, Jr., Flushing, N.Y.; Cecil Melville Couves, Edmonton, Alta.; Angus Campbell Derby, Barriefield, Ontario; James Ernest Devitt, Ottawa; Anthony Richard Curzon Dobell, Town of Mount Royal, Quebec; Jean Panet Fauteux, Montreal; Karl Francis Fleming, Calt, Ontario; Claude Gaudreau, Edmundston, N.B.; John David Haynes, Oakville, Ontario; Richard Heringer, Ottawa; Duane Willis Justus, Chesterville, Ontario; William Joseph Kelly, Sault Ste. Marie, Ontario; William Robert Lawler, Sudbury, Ontario; Carl Julius Leonard, Montreal; Harry Harold Levine, Toronto; Benjamin D. Margolus, Edmonton, Alberta; André Martel, Trois-Rivières, Quebec; Frederick Larkin Moffat, Toronto; Wallace Elton Mydland, Rochester, Minn.; John David McInnes, Sudbury, Ontario; Thomas Donald McLarty, London, Ontario; Norman Tait McPhedran, Toronto; Aloysius Joseph Anthony Noronha, Toronto; Edward George O'Brien, Montreal; John Angus Palmer, Toronto; Jean Maurice Parent, Montreal; Yvon Perigny, Trois-Rivières, Quebec; James Kent Blair Purves, Halifax, N.S.; Richard Edward Robins, Vancouver; Bernard Bobby Rothstein, Duarte, California; John Trevor Malcolm Sandy, Vancouver; James Stanley Simpson, Toronto; William Joseph Edmund Spence, Toronto; Robert Henry Thorlakson, Winnipeg; Kenneth Allan Ward, Edmonton, Alberta.

SURGERY (NEUROSURGERY) (3)

Jacques Cartier Giroux, Ville Mont-Royal, Quebec; Lawrence Edward Loughheed, Vancouver; Bernard Roméo Meloche, Montreal.

SURGERY (OBSTETRICS AND GYNÆCOLOGY) (15)

James Drew Allin, Toronto; Henri Bélanger, Kenogami, Quebec; Leigh Borrodell Brown, Edmonton, Alberta; André Cormier, Montreal; William Allan Webb Dutton, Kingston, Ontario; Rhinehart F. Friesen, Fort Garry, Manitoba; William George Green, Hamilton, Ontario; Muriel Sheila Hill, Toronto; Alan Brian Little, Boston, Mass.; James Forsyth Moffat, Toronto; Clara Jean McFarlane, Winnipeg; Thomas Gerald Ryley, Belleville, Ontario; Reinhardt Frederick Karl Uffeimann, Kitchener, Ontario; Hamilton Gray Wadman, Vancouver; Jack Henry Walters, London, Ontario.

SURGERY (OPHTHALMOLOGY) (2)

Michael Shea, Boston, Mass.; John Staton Speakman, Toronto.

SURGERY (ORTHOPÆDIC SURGERY) (8)

Igor Andrej Stevo Bitenc, Montreal; Henry Francis Farnan, St. Lambert, Quebec; Surendra Prakash Gupta, Washington, D.C.; John Emmett Hall, Toronto; Balwant Singh Kohli, New York, N.Y.; Edward Charters Percy, Montreal; Pennathur Ramamurti, Vancouver; Arthur Anthony Walton Stanley, Escondido, California.

SURGERY (OTOLARYNGOLOGY) (4)

James Douglas Baxter, Montreal; Clare William Dobson, Toronto; Sharda Prasad Sinha, Montreal; George Ernest Douglas Snell, Toronto.

SURGERY (PLASTIC SURGERY) (1)

Leslie Raymond Chasmar, Saskatoon.

SURGERY (UROLOGY) (6)

Clifford Newton Edwards, Sarnia, Ontario; Harold Wilfred Estey, Saskatoon; William Ward Kendrick, Regina, Sask.; Noble Suydam Rustum Maluf, Los Angeles, Calif.; Peter Fairbairn Marr, South Burnaby, B.C.; Casimir Thaddeus Wolan, Saskatoon.

MISCELLANY

THE MURRAY BROTHERS

T. C. ROUTLEY, M.D.

It will soon be 40 years since I first made my acquaintance with the Murray Printing Company. They were situated in very modest quarters in an upstairs floor of a small building on Melinda Street in Toronto, just back of the old *Globe* printing office. It wasn't strange that I should seek them out, because I had learned that they had been doing the printing for the *Canadian Medical Association Journal* since it began—some six or seven years previously.

I shall not forget that first visit, even though it does seem such a long time ago. I well remember the cordial manner in which I was received by Mr. Douglas Murray, a man who was softly spoken and had a very disengaging manner and a charming smile. As soon as he discovered who I was, he was quick to say he would like to have me meet his brother Joe, and very soon, from the back room, coat off and sleeves rolled up and

looking for all the world like a fellow who loved his work, came Joe; sauntering out and receiving me just as cordially as his brother Douglas had done. There began a business relationship and a friendship that endured until both of these old cronies passed away; Douglas in 1945, and Joe in 1957.

Throughout the intervening years I have had much to do with the Murray Printing Company. I recall in 1921, when the Canadian Medical Association took over the *Canadian Medical Monthly*, and decided to revamp the format and size of its Journal, it was my privilege to talk the situation over with the printers. I found them very receptive to a new idea, and in no manner giving one the impression that just because something had been done for ten years it should continue to be done that way for the next hundred years. And so the *Canadian Medical Association Journal* took on a new form and dress, and with some modifications—not too startling ones—has continued in that form from that day onwards.

The purpose of this article is not to extol the Canadian Medical Association and publicize its activities, but rather to pay a well-deserved tribute to two men who for such a lengthy period served the Canadian Medical Association with a fidelity which indeed has been most creditable.

I used to think that Doug was the business man and Joe was the practical man. True enough, they played these respective parts in the early days of the organization, but when Doug passed off the scene and Joe had to leave the back room and come into the front office, he proved himself to be just as efficient an administrator as had his brother Douglas. It was also in 1921 that I first discussed with the printers the financial position which the C.M.A. was in. "Well," said Douglas, "the Association owes us ten or eleven thousand dollars. They have owed us something ever since we began to print their Journal. The amount has just kept climbing up, and of course during the war years the situation got worse, but we've never worried about the account. Some day we are quite sure the Canadian Medical Association will be in funds and will pay its debts, and we will be here, carrying on and still printing their Journal, and anxious to serve them to the best of our ability." And that is exactly what happened. The C.M.A. did pay its debts; whereas they used to pay Murray's something in the neighbourhood of \$20,000 a year, in recent years the account has been running in excess of \$300,000 a year. I think one must hasten to add that the attitude of the Murrys wasn't that they would treat their customers with such courtesy merely to increase their business. They treated us that way because that is the kind of men they were, and indeed if all business was conducted on the same high plane which it has been my experience to find with Douglas and Joe Murray for more than a third of a century, then business throughout the world would be in a very healthy state.

Behind the scenes Douglas and Joe Murray were staunch friends of the medical profession. They enjoyed doing what they did for the Canadian Medical Association, not only to contribute to the finances of their company, but because they felt they were playing a part in doing a worthwhile job for the doctors. They were not scientists, and did not pretend to know very much of what was inside the Journal, but they were proud of the book, and the fewer the mistakes the better they liked it.

Doug and Joe—you would be amazed if you were back and could see the size of the business now. You would sit behind your desks and reflect, I'm sure, about the little old shop on Melinda Street, started by your father, and then the second step when you had a modern plant on Spadina Avenue, and now this great, big sprawling institution which covers many acres. You in your turn both played notable parts in building up this fine business.

LETTER TO THE EDITOR

PUBLIC RELATIONS

To the Editor:

In my humble opinion, Dr. Harry Baker is to be commended for his article, "Doctor-Patient or Doctor-Public Relationship," published in the January 15 issue. It is too bad that the article won't be available for the laity to read. I think that the profession owes Dr. Baker a debt of gratitude for the time and effort taken in writing this clear and thoughtful article.

For years it would seem that the profession has considered it a breach of dignity to participate in any public controversy over health services. Consequently various pressure groups, in particular Labour, who always seem dissatisfied with what they have, have decided for one reason or another to take control of the medical profession. This is a paradox in itself, because those same individuals who think they should dictate to the profession, in all likelihood when confronted with illness in themselves or family, will find that they have to place their trust absolutely in one or more of those very individuals whose lives and fortunes they think they should run.

I must admit that I haven't read all the articles in the Public Relations Forum. Through possibly inefficient use of time, which nevertheless seems to be spent mostly in connection with the practice of medicine, I haven't read all the forums and indeed a number of issues of the *Journal*. It is somewhat irritating, though, to have some individual telling you how to run your office. One is exhorted to give priority to supposed urgent cases and, as these seem to arise daily in varying number, either real or imaginary, it is fairly common to be late for appointments. If the public think that the doctor enjoys keeping his patients waiting, they should be put straight on the matter, and this might be a useful item to put over to the public, as it seems to be a constant thorn in the flesh to a not inconsiderable number of people. I recall the Forum article on the survey on the attitude of the public to doctors by the American Medical Association. The chief mistake in using this survey as an indication of public attitude was that it was an American survey. Even if the results meant anything and were applicable to the Canadian scene, I feel that Canadian medicine should stand on its own feet and not be overshadowed or influenced by conditions on the American side.

I think that Dr. Baker is right when he emphasizes the fear gnawing at the profession. I think that this element of fear must be apparent to the power group leaders who would nationalize everything; but the medical profession is an easy mark at which to start—

"they are disorganized and afraid". Part of this fear is not just fear of public opinion. It is also fear of one's competitor. If I state my honest opinion, I may make people mad or make a group mad, and I may lose some patients to one of my competitors who kept his mouth shut. Before we can be unafraid of public opinion, we must get rid of any elements of jealousy or distrust among ourselves.

In our public relations we should not emulate the practice of the West in its conflicts with the Communist world, viz. always on the defensive. We must take the initiative and I don't mean merely by sponsoring pre-paid medical schemes. We should make it clear to government and public alike that we know more about the practice of medicine than anybody else, and we are going to do it the way we feel is best for all. After all, if we doctors are not satisfied with our lot, what kind of care are the sick going to get? And if we doctors are not at least satisfied with our lot, how are replacements going to be attracted into the profession? From conversations with various colleagues I have become impressed by the uneasiness, dissatisfaction and frustration associated with the practice of medicine, which generally is related to the third party in dealing with patients.

We should put on a strenuous campaign to get across to the public that the happiness they seek and demand is not all involved in the dollar and government welfare services. One of the essentials of happiness is joy in one's work and achievement of perfection in it. "I could always do a good day's work, Doc" is a statement not heard often nowadays. In this day and age of mass production and mass mediocrity and boredom, we should drive home to the public the great need of intelligent and responsible personnel in medical and ancillary services, and the possibility of satisfaction and happiness in entering these fields even though not achieving wealth. When Labour starts shouting about national health service, we should counter in no uncertain terms and shout Labour's responsibility in encouraging the offspring of its members to enter these fields so there will be somebody twenty years hence to give them the care they are going to need. There will be a lot of us needed if *everybody* is going to be on a 6-hour day and 4-day week, and it is going to cost a lot of money. We should voice our views on the effects of leisure—for example, the decrease in longevity associated with leisure. We are all familiar with the fat housewife who admits she overeats only because she hasn't enough to do.

It appears that our defensive attitude is being caused by the awesome aspect of a million-member labour group demanding national health insurance. Actually there is a relatively small sector of this group demanding this who are calling the tune. Surely the doctors as a group in this country are a match for these people in influencing the masses in the care that is necessary for them.

It may even be in our power to save this country from the inflation that threatens it. For instance, if we can convince the masses of the value to their health and the satisfaction to their minds of diligent efforts and reasonable hours of productivity, we may be able to compete against the Communist economic expansion so that the underdeveloped countries can buy our products. I don't feel these thoughts are in the realm of fantasy. I feel it is a responsibility we have for the

ultimate welfare of our country and for the survival of our civilization. At least we should try it.

By following Dr. Baker's suggestion of buying space in the newspapers, we may be able to get a few sound ideas on living across to those who would enslave us.
126 Walton St.,
Port Hope, Ont.,
February 8, 1958.

J. B. BENSON, M.D.

ABSTRACTS from current literature

MEDICINE

Brachial Arterial Pulse Form, with Special Reference to the Diagnosis of Aortic Valvular Disease.

E. W. HANCOCK AND W. H. ABELMANN: *Circulation*, 16: 572, 1957.

Direct brachial arterial pressure tracings from 250 patients were analyzed in relation to their potential clinical value. In 40 "normal subjects" the duration of the systolic upstroke ranged from 0.06 to 0.20 second, mean 0.11-0.14 second, and the contour of the pulse form showed greater variation than heretofore reported for the human adult. Notching was present on the anacrotic limb in two cases. There was a significant increase in the upstroke duration with age.

In 19 of 20 patients with proved severe aortic stenosis characteristic abnormalities of the pressure pulse were evident. The duration of the systolic upstroke was prolonged to a mean of 0.20-0.30 second in this group, and an anacrotic notch was present in 15 cases. While the mean duration of the systolic upstroke was significantly longer than in the normal group, there was some overlap. The arterial pressure pulses of 13 patients with clinical aortic stenosis proved to be physiologically mild or insignificant resembled those of patients with proved severe stenosis, although the mean upstroke of the group was significantly shorter in duration.

Six patients with proved severe pure aortic insufficiency tended to show characteristic pressure pulses with rapid upstrokes, bifid systolic peaks, and low or flat diastolic waves. None of these features may be considered diagnostic, since they are also seen in hyperthyroidism, anaemia, and other high-output states. Pulse pressure tracings from a group of 20 patients with decompensated non-valvular heart disease showed wide variation and did not differ significantly from those obtained from normal subjects, but there was some evidence that both the systolic upstroke and "systole" may be shortened in myocardial failure. Pulse contours in marked mitral insufficiency may be of the "small collapsing" type.

It is concluded that peripheral pressure pulse tracings are difficult to interpret, but of value in determining blood pressure accurately. *The brachial arterial pulse contour may serve to confirm a clinical diagnosis of aortic stenosis, but is not diagnostic of aortic stenosis and in any individual patient yields no information as to the severity of the lesion. A normal brachial arterial pulse form in a patient suspected of aortic stenosis speaks against physiologically significant stenosis, but does not rule it out.* Further studies of the central aortic pulse form and its alteration in transmission to the periphery are indicated, in order to define further the clinical usefulness of arterial pressure tracings.

S. J. SHANE

A Technique of Bronchography in Children with Evaluation of Contrast Media.S. BOVORNKITTI AND J. ZABRISKIE: *Dis. Chest*, 32: 388, 1957.

In this study 124 bronchographies were performed on 100 children: 110 of these were satisfactory. The experience of the authors leads them to believe that successful bronchography in children depends upon the anaesthesia, the choice of contrast material, careful positioning of the patient to ensure complete filling of all segmental bronchi, and finally the radiographic technique. The exact technique is described in detail, as well as the advantages and disadvantages of three contrast media, Lipiodol, Dionosil and Visciodol.

The patient is admitted to hospital for the procedure; postural drainage is instituted before anaesthesia if physical examination reveals the presence of rales. Scopolamine followed by open drop ether is the method used. Direct laryngoscopy permits insertion of an endotracheal tube, and the contrast material is inserted through a catheter of known length. Most satisfactory results have been obtained with Visciodol (sulfanilamide in iodized oil). For best results it is advised that this material be warmed and vigorously stirred up to the moment of instillation. Exact amounts of contrast material and sequence of positions used are described. Better than 85% satisfactory bronchograms were obtained using this method.

Untoward reactions were noted. For example, cyanosis may occur if both lungs are done simultaneously with Visciodol; aspiration of the first side before proceeding to the second side is therefore recommended. High iodine levels and enlargement of the thyroid following the use of Lipiodol and Visciodol have been noted by others as well as by the authors. One would question the need for general anaesthesia in older children and the efficacy of aspiration to remove contrast medium from the first side.

S. J. SHANE

Idiopathic Pulmonary Haemosiderosis in an Adult.W. MATZEL: *Deutsche med. Wchnschr.*, 82: 2194, 1957.

The majority of cases of this rare condition have been reported in children under 16. The present report is apparently the 16th case occurring in an adult. A 32-year-old woman had anaemia, recurrent haemoptysis, dyspnoea and radiologic evidence of diffuse changes in both lungs. The sputum was laden with haemosiderin. She was first seen in the second month of pregnancy because of nausea and vertigo, which were much more pronounced than during previous pregnancies. Frequent fainting and traces of blood in the sputum were reported during the following months. There was temporary improvement on HCl and iron therapy and her condition improved temporarily after delivery of a healthy girl. The anaemia kept on recurring in spite of treatment. A year later, tuberculosis was suspected because of soft radiological shadows in both lungs. These changes increased and 6 months later resembled those of miliary tuberculosis. Dyspnoea became prominent. The sputum showed some blood and many haemosiderin-laden phagocytes. The patient died 2 years after the appearance of the first symptoms of the disease. At autopsy, advanced haemosiderosis of the lungs with fibrosis was the only important finding. There was no evidence of rightsided hypertrophy of the heart. Iron and transfusions usually produce temporary

improvement but the only treatment that appears to have been successful in arresting the recurring haemorrhages in the lungs has been splenectomy. The author favours an allergic process as causative of this disease.

W. GROBIN

Chest Pain with Inverted T Waves, Predominantly in Precordial Leads, as the Only Electrocardiographic Abnormality.F. G. CUTTS *et al.*: *Circulation*, 16: 599, 1957.

This study is concerned with the clinical course of 69 hospitalized patients with chest pain at rest and normal electrocardiograms except for deep inversion of the T waves, particularly in precordial leads. In a few cases there was clinical evidence of a minor degree of myocardial necrosis. More commonly such evidence was lacking. In about one-third of the entire group, the electrocardiogram returned to a normal configuration. After an average follow-up period of about four years, half the total group were either working or were active in their homes and communities.

There were 24 deaths, of which 14 were known to be due to heart disease, chiefly myocardial infarction; seven of the cardiac deaths occurred in the first year of follow-up. Eleven patients came to autopsy; in all instances there was a high degree of atheromatous narrowing of the coronary arteries. Grossly visible myocardial lesions, which could reasonably be correlated with the episodes of pain under consideration here, were usually absent. In a few instances small healed infarcts were noted.

The authors are rather sceptical of the value of anticoagulants in these patients, but their data permit no definite conclusions. If anticoagulants are used, they should probably be continued for several months.

S. J. SHANE

Xanthomatosis and Essential Hypercholesterolaemia.J. N. HARRIS-JONES *et al.*: *Lancet*, 1: 272, 855, 1957.

Clinical and genetic investigation of five families with xanthomatosis and essential hypercholesterolaemia revealed the typical clinical features of corneal arcus, tendon xanthomas and xanthelasma palpebrarum. The corneal arcus was frequently associated with xanthomatosis but in some instances was the only expression of hypercholesterolaemia; it merits investigation especially in the younger age groups. Tendon xanthomas were found over the Achilles tendon, the extensor tendons of hands and toes, and the extensor aspects of the knee and elbow. Xanthelasma palpebrarum usually accompanied these xanthomas but was occasionally found alone or in conjunction with the corneal arcus.

Of the 10 patients with hypercholesterolaemic xanthomatosis 8 had had ischaemic heart disease, which had been the cause of death in four. Hypercholesterolaemia was observed in 38 persons, of whom 15 had ischaemic heart disease. The frequency with which coronary disease proves fatal at an early age was illustrated by a girl who died at the age of 27 and was found at necropsy to have extensive coronary atheroma; another girl had electrocardiographic evidence of coronary occlusion at the age of 21, and her sister, who presented an identical picture, died of ischaemic heart disease at the age of 21.

Essential hypercholesterolaemia is transmitted as a dominant trait.

LILLIAN A. CHASE

SURGERY

Stenosis of Pelvic Arteries and Lumbar Disc Syndrome.

P. LUNFSGAARD-HANSEN, H. MARKWALDER AND A. SENN:
Schweiz. med. Wchnschr., 88: 6, 1958.

A 42-year-old man complaining of lumbar pain radiating to the left leg was thought to have a herniated lumbar disc. Though the myelogram showed a filling defect in L4-L5, operation failed to demonstrate any abnormality in this area. Subsequently, arteriography demonstrated stenosis and almost complete occlusion of the left external iliac artery and partial occlusion of the right common iliac artery. Endarterectomy was carried out bilaterally and the patient was relieved of his pain. He died 3 months later from coronary occlusion; at autopsy, both iliac arteries were patent and free of any intimal changes.

The clinical picture of occlusion of pelvic arteries is described and the problem of differential diagnosis discussed.

W. GROBIN

Aneurysms of the Abdominal Aorta and Its Branches.

M. L. GLIEDMAN, W. B. AYERS AND BETTY L. VESTAL:
Ann. Surg., 146: 207, 1957.

As an aid to selection of patients for operation, necropsy material was studied to determine the outcome in untreated cases of abdominal aneurysm. Survival time from the time of diagnosis could not be predicted individually. These patients pass through three phases: (1) asymptomatic; (2) symptomatic prelude; (3) rupture. If the diagnosis is made on chance examination, the prognosis is not as poor as when it is made in phase (2). It is the phase (1) cases that are problems of selection, for there is no helpful information on the rate of enlargement of abdominal aortic aneurysms.

Of 96 persons with aneurysms of the abdominal aorta, 30% were dead in one month, 74% within six months, and 80% within a year of the onset of symptoms. Luteal aneurysms of the aorta were often multiple. Only 4% of patients died from a disease unrelated to aneurysm or its cause, and 49% died of vascular rupture. Of the aneurysms over 7 cm. wide, 72% ruptured but of those under 7 cm. wide only 18% ruptured. Hypertension was present in 47%, and 35% showed previous myocardial infarction.

BURNS PLEWES

Prognosis in Pulmonary Embolectomy.

K. VOSSCHULTE: *Deutsche med. Wchnschr.*, 83: 57, 1958.

Operation for pulmonary embolism was suggested by Trendelenburg in 1908. Although his work was based on experimental work and his account of diagnosis, indications and technique was perfect, the operation has seldom been successful. The present author found only 15 cases of survival after embolectomy. The operation has been carried out less frequently in recent years, in spite of the increasing incidence of pulmonary embolism and of tremendous improvements in cardiovascular surgery. According to the author, emphasis on prophylaxis with anticoagulants and other measures has failed to prevent the steady rise of fatal pulmonary embolism after major surgery. The primary cause of death in pulmonary embolism is not irreversible brain damage but anoxic damage to the myocardium. The period available for resuscitation is probably somewhat longer than usually quoted,

possibly 8-10 minutes. The following appear important in successful embolectomy: (1) In the few minutes available after pulmonary embolism the minimal circulation still available, such as venous blood and blood from the bronchial arteries, which is well oxygenated, is of paramount importance for resuscitation. Its circulation through the myocardium is more important than that through the brain. (2) Artificial respiration must be started in every case of pulmonary embolism. It improves the oxygenation of the blood still circulating. (3) Artificial respiration must be continued for a long time during the recovery period. A case of pulmonary embolism in a 47-year-old woman 17 days after an uncomplicated gastric resection is described. Embolectomy was carried out and the patient was discharged 16 days later in good health. The danger of air embolism during the operation and of dilatation of the right ventricle is emphasized. Transfusions should not be given until after the operation, and it is planned to relieve the right ventricle during the operation by aspirating the blood from it. Intra-aortic transfusion postoperatively may be the quickest way to raise the blood pressure.

W. GROBIN

The Problem of Postoperative Wound Infections Caused by *Staphylococcus Aureus*.

C. W. HOWE: *Ann. Surg.*, 146: 384, 1957.

Wound sepsis caused by *Staphylococcus aureus* has been reported to be reaching serious proportions in many centres. Hospitals have been closed for this reason. Staphylococcal carriers among hospital personnel and other patients, increasing incidence of resistance to various antibiotics and post-hospitalization furunculosis are subjects of discussion. Possibly there is no real increase in wound infection rate but a persistence in spite of antibiotics. There have also been reports of increasing wound sepsis associated with the Gram-negative enteric organisms.

A study of wound infection over an eight-year period in a Boston hospital showed a linear increase in the percentage of wound infections caused by the staphylococcus over the years. Hospital carrier rates in the nose and on the skin showed a drop from 99% to 52% during the period and penicillin-resistant strains among carriers remained unchanged. Wound infection rates for house patients were always higher than for private ones. Private patients showed an infection rate of about 1%, which seems as good as will be attained.

The wound infection rate increased more rapidly during the 1949-53 period when prophylactic antibiotics were used heavily. There is evidence that carrier rate has little to do with infection rate. One active infection disseminating organisms is probably more important than a high carrier rate. The widespread use of a so-called antibiotic "umbrella" tends to a survival of insensitive staphylococci and a relaxation in aseptic surgical technique in hospitals. The masking of infection by the use of antibiotics leads to post-hospitalization infections. Antibiotics have been incriminated as accomplices in the selective survival and emergence to predominance of the more virulent pathogenic strains.

Recommended are: most careful aseptic techniques of wound closure and care, housekeeping cleanliness and environmental disinfection, early control of any wound infection with debridement and early secondary closure, a reconsideration of the proper use of antibiotic therapy in wound infection.

BURNS PLEWES

OBSTETRICS AND GYNÆCOLOGY

Blood Transfusion in Obstetric Hæmorrhage.

W. G. MCGREGOR AND A. D. TOVEY: *Brit. M. J.*, 2: 855, 1957.

Estimations of the blood volume are of considerable help in the treatment of severe obstetric hæmorrhage and are a guide to the amount of blood to be administered. In some instances patients may have a circulating blood volume of 70% of normal with no clinical evidence in the form of variations in pulse rate and blood pressure. The blood loss may not be completely accounted for.

In severe accidental hæmorrhage the blood pressure on admission may mislead because many patients are initially hypertensive. The disease may be complicated by anæmia.

The patient suffering from severe obstetric hæmorrhage should have the hæmoglobin, packed cell volume, plasma fibrinogen, blood group, and blood volume determined on admission. When blood is transfused in adequate amounts the immediate complication of renal cortical necrosis is averted because renal anoxia is brief, and the remote prognosis may be improved. The aim of transfusion should be to enable the patient to withstand the subsequent effect of hæmorrhage and trauma and to restore the patient's blood volume to 80-90 ml./kg. body weight. There is a tendency to under-transfuse in cases of obstetric hæmorrhage. This can be avoided by estimating the blood volume, and a clinical test is described should facilities for this not be available. It is emphasized that a bottle of blood contains 400 ml., not a "pint".

There is no maternal indication for Cæsarean section in severe accidental hæmorrhage. ROSS MITCHELL

Frequency of Defects in Infants Whose Mothers had Rubella During Pregnancy.

L. GREENBERG, O. PELLETTERI AND J. BARTON: *J.A.M.A.*, 165: 675, 1957.

A prospective study of pregnant women with rubella was carried out in New York City from 1949 to 1955. Of 103 women who had rubella in the first trimester of pregnancy, 27% gave birth to normal infants, 3% to congenitally malformed babies, 3% to stillbirths, and 12% to other non-viable fetuses. Therapeutic abortions were performed on 46% and the case histories of 10% were lost from the study.

The incidence of congenital deformities among the live-born babies of women with rubella during the first trimester of pregnancy was 9.7%. In a similar study elsewhere in New York of pregnant women who did not have rubella, the incidence of congenital malformations was 7%. If only defects of the brain, eyes, ears and heart are considered in the latter study, the incidence was 1.9%.

Large-scale prospective studies with controls are needed to ascertain comparative rates of incidence. The available data indicate a rate of about 12% of total births. The fantastically high rates set by early authors are incorrect, being based on retrospective studies of malformed infants, which did not account for the babies who were born normal and who therefore escaped from the study. Routine therapeutic abortion in pregnant women who develop rubella during the early months of pregnancy is medically unjustified. Exposure of susceptible young girls to

cases of rubella is medically justified and is a sound public-health procedure. ROSS MITCHELL

THERAPEUTICS

Clinical Experience of Newer Chemotherapeutic Agents in Treatment of Neoplasms.

N. J. PEREVODCHIKOVA: *Deutsche med. Wchnschr.*, 83: 21, 1958.

Cancer institutes in the Soviet Union use mainly cytostatic agents of the chlorethylamino group, and to a lesser extent those of the ethylamino group. The present report concerns itself with the results obtained in treatment of malignant disease with Sarkolysin (DL-p-di-beta-chlorethylaminophenylalanine hydrochloride) and Dopan (4-methyl-5-di-beta-chlorethylaminouracil). Sarkolysin was synthesized in the USSR in 1954 and came into more widespread use in 1956. Its action is particularly striking in seminoma of testes and their metastases, in reticulum-cell sarcoma, Ewing sarcoma, malignant endothelioma, primary tumours of the liver and bile ducts, thymoma and myeloma. It is administered intravenously or intra-arterially (0.25% solution in saline) in 40-50 mg. weekly doses to a total of 200-250 mg. Dopan is used in chronic myelosis and lymphogranulomatosis, where it is better tolerated than its predecessors but is otherwise not superior to them. It is given orally in 10-15 mg. doses to a total of 50-80 mg. Summaries of the results obtained and several illustrations of patients before and after treatment, as well as references, accompany this paper.

W. GROBIN

Long-Term Anticoagulant Therapy.

J. E. ESTES: *Postgrad. Med.*, 22: 323, 1957.

The prime indication for long-term anticoagulant therapy is any situation in which a patient faces a significantly increased and prolonged risk of thromboembolism. Since no single test or group of tests can detect the imminence of thrombosis or embolism, physicians must rely on their clinical judgment.

The diseases in which physicians have utilized long-term anticoagulant therapy include cardiac diseases such as myocardial infarction and atrial fibrillation, arterial diseases such as arteriosclerosis obliterans, and nervous diseases such as recurrent thrombophlebitis.

At present the coumarin compounds are the only available anticoagulant drugs feasible for use over prolonged periods. It is not practical to use heparin in this manner because of the necessity for parenteral administration. Dicoumarol was the first coumarin drug used for anticoagulant purposes. Although several similar compounds have been tried both clinically and experimentally, none seems to have any significant advantages over dicoumarol. Tromexan (ethyl biscoumacetate) has the advantage that its effect on plasma prothrombin activity occurs and is dissipated more rapidly. However, Tromexan is relatively more expensive and its effect on plasma prothrombin activity is more erratic. For long-term anticoagulant therapy most workers prefer dicoumarol.

In spite of the many problems incident to long-term anticoagulant therapy, it can be considered clinically safe and effective in the presence of suitable indications, absence of contraindications, and with facilities for careful control.

S. J. SHANE

Hyperuricæmia Associated with Treatment of Acute Leukæmia.

G. L. GOLD AND R. D. FRITZ: *Ann. Int. Med.*, 47: 428, 1957.

Three episodes of hyperuricæmia and uræmia were associated with the treatment of acute lymphocytic leukæmia. In the first patient, hyperuricæmia was related to the administration of 6-mercaptopurine and Methotrexate (amethopterin) on one occasion, and of hydrocortisone during the second episode. In the second patient, hyperuricæmia occurred during administration of 6-mercaptopurine, cortisone and ACTH.

Marked rise in serum uric acid and excretion of uric acid after antileukæmic treatment may be explained by the following hypotheses: (1) The drugs may actually cause lysis of the leukæmic cells in the blood, bone marrow and other tissues, and release large amounts of nitrogenous products and uric acid, causing an "acute uræmic" picture. (2) Large amounts of uric acid and other purines and pyrimidines may of themselves interfere with normal renal function. It has been shown that adenine causes a uræmic picture due to deposition of 2, 8-dioxadenine in the kidneys. (3) Chemotherapeutic agents may interfere with the re-utilization of nucleic acid breakdown products derived from white blood cells. (4) Pre-existing renal disease or leukæmic infiltration of the kidney may aggravate the metabolic changes.

In every case of acute leukæmia the possibility of an acute uræmic episode during antileukæmic therapy should be considered. The risk is apparently greatest in patients with acute lymphocytic leukæmia with a high white cell count.

S. J. SHANE

PÆDIATRICS

Idiopathic Hypercalcæmia of Infancy, with Failure to Thrive.

A. M. BONGIOVANNI, W. R. EBERLEIN AND I. T. JONES: *New England J. Med.*, 257: 951, 1957.

This article is an excellent summary of a condition rarely reported on this continent but becoming increasingly common in the United Kingdom. The authors investigated three cases within a period of two years at the Children's Hospital of Philadelphia. They feel the condition may be more common than is appreciated and may frequently go unrecognized.

Idiopathic hypercalcæmia of infancy may vary in severity from a mild form where the infant fails to thrive to severe states simulating severe vitamin D intoxication, accompanied by renal damage, deposition of calcium in tissues, and skeletal changes. The etiology of idiopathic hypercalcæmia is uncertain, although there is evidence to suggest that it may be related to a hypersensitivity to vitamin D. Treatment consists in strict limitation of calcium and vitamin D intake. Sodium phytate by mouth may be of value in preventing calcium absorption, and cortisone may aid in the excretion of calcium and phosphorus.

The most interesting aspect of this paper, from a practical point of view, is the suggestion raised by the authors that vitamin D is being used to excess in infant nutrition. So many foods, particularly milk, are being "fortified" with the vitamin that there is a real danger that infants may ingest an excessive amount.

NORMAN S. SKINNER

THE CANADIAN MEDICAL RETIREMENT SAVINGS PLAN

(Continued from page 441)

100	Standard Oil Company (New Jersey)	
	Capital Stock..... (Can.)...	4,722.50
100	Union Gas Co. of Canada Limited	
	Capital Stock.....	7,500.00
	Cash.....	757.43
	Dividends declared but unpaid on stocks selling ex-dividend.....	198.26
		\$41,090.69
	Less: Administration Expense Allowance 1/8% quarterly.....	51.36
	Net Value of Fund.....	\$41,039.33

Thus, on the basis of 4,018.19 units, the unit value was determined to be \$10.21. Contributions made to the common stock fund during the three months prior to February 9 will purchase units at this rate.

This table, prepared by The National Life Assurance Company of Canada, illustrates the amount of monthly life annuity, guaranteed 120 months, which would be purchased by \$100 monthly contributions accumulated at 4.50% per annum.

The amounts shown, of course, are not guaranteed, as the maintenance of interest rates above the guaranteed level of 3.50% is dependent upon future insurance company interest earnings.

Entry Age	Retirement Age	Males	Females
25	65	\$831.29	\$751.10
26	65	788.06	712.04
27	65	746.69	674.66
28	65	707.11	638.90
29	65	669.23	604.67
30	65	632.98	571.92
31	65	598.29	540.57
32	65	565.09	510.58
33	65	533.32	481.88
34	65	502.92	454.41
35	65	473.84	428.13
36	65	446.00	402.98
37	65	419.36	378.91
38	65	393.87	355.87
39	65	369.48	333.83
40	65	346.13	312.74
41	65	323.80	292.56
42	65	302.42	273.25
43	65	281.96	254.76
44	65	262.39	237.08
45	65	243.66	220.15
46	65	225.73	203.96
47	65	208.58	188.46
48	65	192.17	173.63
49	65	176.46	159.44
50	65	161.43	145.86
51	65	147.04	132.86
52	65	133.28	120.42
53	65	120.11	108.52
54	65	107.50	97.13
55	65	95.44	86.23
56	65	83.90	75.81
57	65	72.85	65.83
58	65	62.28	56.28
59	65	52.17	47.14
60	66	53.25	48.09
61	67	54.36	49.07
62	68	55.48	50.08
63	69	56.61	51.11
64	70	57.76	52.17

OBITUARIES

DR. A. S. GRAHAM, 57, associate director for the London Life Insurance Company, died on January 18 in St. Joseph's Hospital, Toronto, Ont. Dr. Graham was born in Glencoe, Ont., and graduated in medicine from the University of Western Ontario in 1925. He did postgraduate work in Toledo, Ohio, before setting up practice in London, Ont., and specializing in anaesthesia. In 1951 he joined the London Life Insurance Company. He was a member of the Life Insurance Medical Officers Association and the International Association of Anaesthetists.

He is survived by his widow, a son and a daughter.

DR. BERNARD WOODWORTH SKINNER, 68, died on February 2 in the Dawson Memorial Hospital, Bridgewater, N.S., after a heart attack. Dr. Skinner was born at Weston, King's County, N.S., and graduated in medicine from McGill University in 1917. During World War I he served with the 1st Canadian Expeditionary Force with the rank of captain. After his graduation he went to Mesopotamia with the British Forces and stayed there for several years. On his return to Canada he practised medicine at Hubbards, N.S., and in 1931 he moved to Mahone Bay, N.S., where he practised until his death.

He is survived by his daughter.

DR. JOSEPH ARTHUR SYLVESTRE, 86, died on January 25. He was born at St. Barthélemy, Quebec, and received his medical education at Laval University, Montreal, where he graduated in 1895. For many years he practised at Acton Vale and at St. Ours, Quebec, before setting up practice in Montreal.

He is survived by his widow, a son and a daughter.

DR. ROBERT T. NOBLE

AN APPRECIATION

T.C.R. writes:

"In the early summer of 1918, a tall, distinguished, grey-bearded, grey-headed gentleman came to call on me. He introduced himself as Dr. Robert T. Noble, a Fellow of the Academy of Medicine of Toronto, a general practitioner, and one who was interested in organized medicine and all that it stood for. We had a very pleasant conversation, but when he left I racked my brain to see if I could find the reason for the call. It wasn't until many months later that I discovered that he had come to look me over, just to make up his own mind whether or not I was a suitable person to be put up as the Secretary of the Ontario Medical Association. The fact that some time later I was elevated to that office gave me courage to believe that he and some others thought I might fit the bill. There began then a friendship which endured until a very few days ago, when, at the ripe old age of 87, Bob Noble quietly slipped from our midst.

"I think the adjective 'urbane' applied to Bob Noble as well as to any man I ever knew. He enjoyed a very large practice in this city and was pleased and proud to call himself a general practitioner, but I always felt that Bob was more than that. He was a family counsellor, a confidant, and a friend to the great majority of his patients. He also found time to take a very keen interest in the affairs of organized medi-

cine, and indeed, for a number of years, following an age when most of us are thinking of retiring, he took up the position of Registrar of the College of Physicians and Surgeons of Ontario, and made a very excellent job of it. Bob was a direct sort of person; he liked to get at the heart of things, and he wasn't timid in expressing opinions. If he disagreed with a colleague, he did it in such a gentle and happy manner that no offence could possibly be taken. Perhaps his greatest love, outside of his family and his practice, was the Academy of Medicine of Toronto. Much time, and indeed, many long hours of service did he contribute to that institution, and it owes a good deal of its present stature and efficiency to the untiring efforts of Bob Noble. He was what I call a 'member of the old school', and was just about the last of his generation to be amongst us. Many people used to say that Bob was lucky. He seemed to get the cream of the practice, and gave one the impression that whatever he sought he accomplished, not in a selfish way, but having an objective which he felt was a worthy one, he persisted until he reached his goal. In fact, some people say that Bob was lucky in death, because he was perfectly well until a few days before he was stricken with a coronary, and after a pleasant day with his family he settled down for the night, and before the morning arrived he had passed away.

"To all his family and his friends, who are sadly going to miss Bob Noble, one extends sincerest sympathy."

FORTHCOMING MEETINGS

CANADA

MEDICAL SECRETARIES ASSOCIATION (CENTRAL), Toronto, Ont. Special speaker, Mr. Jack Pardee, Public Relations Field Secretary, Michigan State Medical Society. (Miss Olive M. Howell, Academy of Medicine, 288 Bloor St. West, Toronto 5, Ont.) April 2, 1958.

COLLEGE OF GENERAL PRACTICE OF CANADA, Second Scientific Assembly, Winnipeg, Man. (Dr. W. V. Johnston, Executive Director, College of General Practice of Canada, 176 St. George St., Toronto 5, Ont.) April 14-16, 1958.

AMERICAN ACADEMY OF DENTAL MEDICINE, 12th Annual Meeting, Montreal, Que. (Dr. Louis J. Rosen, Convention Chairman, 3465 Côte des Neiges Road, Montreal, Que.) May 28-31, 1958.

CANADIAN FEDERATION OF BIOLOGICAL SOCIETIES (Canadian Physiological Society, Pharmacological Society of Canada, Canadian Association of Anatomists, Canadian Biochemical Society), First Annual Meeting, Kingston, Ont. (Dr. E. H. Bensley, Honorary Secretary of the Board, Canadian Federation of Biological Societies, Montreal General Hospital, 1650 Cedar Avenue, Montreal 25, P.Q.) June 7-11, 1958.

CANADIAN OTOLARYNGOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OTOLARYNGOLOGIE), Annual Meeting, Halifax, N.S. (Dr. Donald M. MacRae, 324 Spring Garden Road, Halifax, N.S.) June 9-11, 1958.

CANADIAN TUBERCULOSIS ASSOCIATION, 58th Annual Meeting, Quebec City, P.Q. (Dr. G. J. Wherrett, Executive Secretary, Canadian Tuberculosis Association, 265 Elgin St., Ottawa 4, Ont.) June 9-12, 1958.

CANADIAN OPHTHALMOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OPHTALMOLOGIE), 21st Annual Meeting, Halifax, N.S. (Dr. R. G. C. Kelly, Secretary, 90 St. Clair Ave. West, Toronto 7, Ont.) June 12-14, 1958.

CANADIAN MEDICAL ASSOCIATION, 91st Annual Meeting, Halifax, Nova Scotia. (Dr. A. D. Kelly, General Secretary, The Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) June 15-19, 1958.

THIRD CANADIAN CANCER RESEARCH CONFERENCE, Honey Harbour, Ont. (Dr. Robert L. Noble, Medical Research Laboratory, University of Western Ontario, London, Ont.) June 15-19, 1958.

CANADIAN PSYCHIATRIC ASSOCIATION, Annual Meeting, Halifax, Nova Scotia. (Dr. Charles Roberts, P.O. Box 6034, Montreal, Que.) June 20-21, 1958.

INTERNATIONAL FERTILITY ASSOCIATION, Windsor Hotel, Montreal, Que. (Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., U.S.A.) June 20-22, 1958.

INTERNATIONAL FEDERATION OF GYNÆCOLOGY AND OBSTETRICS, 2nd Congress, Montreal, P.Q. (Professor Léon Gérin-Lajoie, Suite 313, 1414 Drummond Street, Montreal, P.Q.) June 22-28, 1958.

10TH INTERNATIONAL CONGRESS OF GENETICS, Montreal, P.Q. (Mr. J. W. Boyes, General Secretary, 10th International Congress of Genetics, McGill University, Montreal, P.Q.) August 20-27, 1958.

UNITED STATES

AMERICAN ACADEMY OF GENERAL PRACTICE, Annual Meeting, Dallas, Texas. (Mr. Mac F. Cahal, Executive Secretary, Volker Boulevard at Brookside, Kansas City 12, Mo.) March 24-27, 1958.

CONGRESS OF INTERNATIONAL ANÆSTHESIA RESEARCH SOCIETY, New Orleans, La., U.S.A. (Dr. A. William Friend, East 107 & Park Lane, Cleveland 6, Ohio, U.S.A.) March 24-27, 1958.

FIFTH INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Philadelphia, Pa. (Dr. E. R. Loveland, Secretary-General, Fifth International Congress of Internal Medicine, 4200 Pine St., Philadelphia 4, Pa.) April 24-26, 1958.

INTERNATIONAL SOCIETY OF GASTROENTEROLOGY, 3rd World Congress, Washington, D.C. (Dr. H. M. Pollard, University Hospital, Ann Arbor, Michigan.) May 25-29, 1958.

AMERICAN GOITER ASSOCIATION, Annual Meeting, San Francisco, Cal. (Dr. John C. McClintock, Secretary, 149½ Washington Ave., Albany 10, New York.) June 17-19, 1958.

AMERICAN MEDICAL ASSOCIATION, Annual Meeting, San Francisco, California. (Dr. George Lull, 535 North Dearborn Street, Chicago 10, Ill.) June 23-27, 1958.

OTHER COUNTRIES

FIFTH BAHAMAS MEDICAL CONFERENCE, Nassau, Bahamas. (Dr. B. L. Frank, Organizing Physician, The Dolphin Hotel, Nassau, Bahamas.) April 1-12, 1958.

SEVENTH INTERNATIONAL CANCER CONGRESS, Royal Festival Hall, London, England. (Secretary-General, 7th International Cancer Congress, 45 Lincoln's Inn Fields, London, W.C.2, England.) July 6-12, 1958.

CONGRESS OF MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, Bedford College, Regents Park, London, England. (Dr. Janet Aitken, 30a Acacia Road, London, N.W.8, England.) July 15-21, 1958.

INTERNATIONAL UNION OF BIOLOGICAL SCIENCES, London, England. (Chairman, Division of Biology and Agriculture, National Research Council, 2101 Constitution Ave., N.W., Washington 25, D.C., U.S.A.) July 16-23, 1958.

SIXTH PAN AMERICAN CONGRESS OF OTO-RHINO-LARYNGOLOGY AND BRONCHESOPHAGOLOGY, Rio de Janeiro, Brazil. (Dr. Walter Benevides, Caixa Postal 2838, Rio de Janeiro, Brazil.) August 10-16, 1958.

THIRD INTERNATIONAL CONGRESS OF ALLERGOLOGY, Paris, France. (Dr. S. M. Feinberg, 303 E. Chicago Avenue, Chicago 11, Ill., U.S.A.) October 19-26, 1958.

PROVINCIAL NEWS

ONTARIO

Dr. Rachmiel Levine, chairman, Department of Medicine, Michael Reese Hospital, Chicago, gave the annual Phi Delta Epsilon lecture at the University of Toronto on the etiology of diabetes mellitus. Using a historical background, he developed the various theories. Of great interest was the implication of the pituitary, adrenal and thyroid glands. However, the fact that the vast majority of the diabetic population does not have disease of these organs was evidence in itself that they were not prime causes of diabetes.

After a dinner in Dr. Levine's honour at the Primrose Club, he went to Mount Sinai Hospital where he addressed an open staff meeting on "Metabolic Disturbances in Diabetic Ketoses and its Management". He discussed the intermediary metabolism of glucose with emphasis on the genesis of ketone bodies as a prelude to acidosis. He then recommended a scheme of therapy based on the patient's individual requirements for insulin, electrolytes and fluid.

Dr. John F. McCreary, Professor of Pædiatrics, University of British Columbia, delivered the Alpha Kappa Kappa lecture at the Hospital for Sick Children. His topic was child health in India.

Dr. Michael Walker, who has practised at Bodmin, Cornwall, England, for the past eleven years, has recently taken up practice in Kingston. Dr. Walker is a noted marksman and has twice shot for England with the national team visiting Canada.

LILLIAN A. CHASE

QUEBEC

Every graduate of medicine from McGill University will be grieved to hear that Miss Gertrude D. Mudge, long-time Assistant Secretary of the McGill University Faculty of Medicine, died on January 21 at the Royal Victoria Hospital in Montreal. She was 72 years of age. Miss Mudge had been associated with McGill University for 38 years, and for 30 years she was Assistant Secretary in the Faculty of Medicine. She retired in 1953 and on retirement was awarded the degree of Master of Arts, honoris causa, in appreciation of her long and devoted service. Over many years she provided medical students with sympathy, understanding and, on occasion, timely though unofficial warning or rebuke. She was a particularly staunch friend and champion of women medical students.

The Montreal General Hospital was host on February 7 to the Montreal Medico-Chirurgical Society with a Clinical Evening. A special feature was that the program opened with a buffet supper in "Livingston Hall" (Nurses' Home). This allowed members to go directly from their offices to the hospital, have supper and at the same time view the technical exhibits. There were nine in all, including among others "Hæmodynamics of Heart Disease", "Hypothermia", "The Malignant Carcinoid Syndrome", "Treatment of Frontal Sinus Infection", "The Tonometer for Tension Taking" and the "Technicon Auto Analyzer-Automation Brought to Clinical Chemistry". At 8.15 p.m. a scientific pro-

gram, made up of ten short presentations, was presented in the amphitheatre. Subjects discussed by staff members of the hospital included "Fluothane: A New Anaesthetic Agent", "Arterial Grafts", "Early Diagnosis of Cancer of the Cervix", "Barbiturate Poisoning", and "Hypometabolism vs. Hypothyroidism". Dr. P. G. Rowe, Surgeon in Chief, was chairman of the program.

There is nothing very outstanding to report from Divisional activity. However, this does not imply that we are at a standstill. In fact, we see ever increasing interest in activities with our Division. Our membership is constantly growing. Plans for the next annual meeting, to be held the first week in May at the Chantecler, St. Adèle-en-Haut, are well under way and this should be one of the best annual meetings in our history. Brochures in French as well as in English on the Canadian Medical Retirement Savings Plan are now in the hands of all of our members. Last, but certainly not least, is the activity of the newly organized Inter-Association Committee on Health Insurance. This includes all the medical associations active in this province, and the obvious aim is to present a unified opinion when and if health insurance comes into being in our province.

In addition to all the honours that have been bestowed on Dr. Wilder Penfield, O.M., Director of the Montreal Neurological Institute, the latest is the highest award of the French Academy of Surgery—La Médaille Lannelongue. The Academy selects a recipient for the medal at five-year intervals and it goes to an outstanding doctor, surgeon or research worker in surgery. Selection is made by an international panel of prominent surgeons from France, Britain, the United States and other countries. Dr. Penfield's work has been recognized throughout the world and we join others in saluting him as the recipient of this new honour.

Dr. Bram Rose, Associate Professor of Medicine, McGill University, and Associate Physician, Royal Victoria Hospital, has been elected secretary of the American Academy of Allergy. He has been a member of the Academy since 1947 and a Fellow since 1948. He has served as a member of the editorial board, executive committee, liaison committee with the Research Council, international committee and chairman of the undergraduate education committee.

Dr. F. Lloyd Mussells, a 1944 graduate of medicine at McGill University, has been appointed Director of the Peter Bent Brigham Hospital in Boston. Dr. Mussells, who is a native of Montreal, received a Master's degree in hospital administration from Columbia University in 1949 and was most recently executive director of the Philadelphia General Hospital. In Boston he succeeds Dr. Norbert A. Wilhelm.

A. H. NEUFELD

NEW BRUNSWICK

Dr. J. M. Barry, Registrar of the Medical Council of New Brunswick, has just issued the Annual Announcement of the Council. In it there appear the names of 410 doctors registered and licensed in the province.

Some time ago Dr. K. A. Baird and Dr. A. D. Gibbon of Saint John circularized the members of the Saint John Medical Society asking that any documents, articles such as out-of-date instruments, old books, letters or any other records connected with the history of medicine in this province be forwarded to them. The New Brunswick Museum has promised to house this material. It is believed that an encouraging response is in evidence. This effort should have the support of all physicians because it is so easy to forget or overlook the labours and successes of our predecessors in our profession. Legend and recorded humour of old days puts flesh and life on the dead bones of stilted history.

Dr. Ian MacKenzie, Professor of Surgery, Dalhousie University, was the speaker at the monthly meeting of the Saint John Medical Society on February 20. He spoke on "Arterial Insufficiency in the Lower Limbs". As is becoming usual, the speaker appeared as guest consultant at an afternoon clinical conference.

Dr. R. S. Grant of the Pædiatrics Department of Dalhousie University visited a joint meeting of the St. Croix and Washington County Medical Societies held in the Charlotte County Memorial Hospital at St. Stephen on February 5. He spoke on two topics, "Infants that are not doing well" and "Meningitis".

The following afternoon Dr. Grant attended a clinical conference in the Fredericton Victoria Public Hospital and in the evening addressed the York-Sunbury Medical Society on "Antibiotics in Pædiatrics".

These several extramural meetings are sponsored by Dalhousie University and the N.B. Medical Society.

A. S. KIRKLAND

PRINCE EDWARD ISLAND

A meeting of the Medical Society of Prince Edward Island was held on Wednesday, February 12, at 6.30 p.m. at the Charlottetown Hotel. After dinner and a short business meeting, the guest speaker, Dr. F. G. Dolan, surgeon of Halifax, N.S., spoke on "The Selection of Cases for Heart Surgery and the Results of Cardiac Surgery" and this was followed by general discussion.

The Executive Committee met on Wednesday, February 12 at 4.30 p.m. at the Charlottetown Hotel and the Medical Council of Prince Edward Island met on Thursday, February 13 at 4.30 p.m. at the Poly-clinic.

A meeting of salaried physicians was held on Thursday, February 13 at 8.00 p.m. at the Charlottetown Hotel. The meeting was called in agreement with the 1957 Annual Meeting. The C.M.A. Section of Salaried Physicians is becoming more active and all physicians in this category were invited to attend the meeting and present their opinions on the activities which should be pursued. Any physician who derives the major portion of his income from salary is eligible to be a member of the C.M.A. Section.

NEWFOUNDLAND

Children's Health Plan

The second phase of the provincial government's Children's Health Plan came into operation on February 1, after agreement had been reached between

the government and the Newfoundland Medical Association.

This stage of the plan provides for free physicians' and surgeons' services to hospital in-patients under the age of 16. Free hospitalization at ward rates (including laboratory and x-ray services and drugs), and out-patient diagnostic procedures performed in hospital, had previously been established in January 1957, when the first stage of the plan was implemented.

After some preliminary meetings, negotiations between government and profession took place on January 6 and 7 in St. John's. The negotiating committee for the profession consisted of the four principal officers of the Newfoundland Medical Association together with Dr. A. D. Kelly and Mr. B. E. Freamo of the central office of the C.M.A. The agreement was approved by the St. John's branch of the Association on January 7, and subsequently by the branches in central and western Newfoundland.

The agreement takes the form of a contract embodying the principles of free choice of physician by patient and of patient by physician where practicable, respect for the confidential nature of the patient-doctor relationship as far as possible, and fee-for-service based on the 1956 schedule of fees of the Newfoundland Medical Association. A Committee on Medical Services, with a majority of members appointed by the Medical Association, will make recommendations in cases of dispute concerning fees. A second, Advisory, Committee from the profession will consult with the Minister of Health and "will study and recommend measures designed to maintain and improve the quality of care under the Children's Health Service in all its aspects".

Announcement of the beginning of this stage of the Plan was made in the House of Assembly on January 27 by Dr. McGrath, the Minister of Health, and was received with enthusiasm by the members of both government and opposition. He commented on the spirit of co-operation and goodwill displayed by the medical profession in these negotiations, and acknowledged that hospital accommodation for both children and adults is inadequate in this province. He said that plans for early expansion of hospital facilities have been made.

Concurrently a public statement was issued by the Executive of the Medical Association. The full text of this statement is given below.

The editor of the St. John's "Daily News" on February 5 made note of the Medical Association's views on the matter. He reiterated the great need for more hospital facilities in this province, and pointed out the enormous cost both of initial construction (estimated at \$35,000,000) and of maintenance. But he did not think that these facts justified deferral of the free services now offered.

Except for this editorial, and for a few passing references of approval by newspaper editorialists and columnists, public reaction in press and radio on this subject has been absent.

Public Statement by the Newfoundland Medical Association Relative to the Children's Health Plan.

"On December 13, 1957, the Premier of Newfoundland announced that the Government had decided to take 'the second important step forward' in the Children's Health Plan. This was stated to be the

provision of 'free medical and surgical services for all children while they are in hospital.'

"Following this announcement, the executive of the Newfoundland Division, Canadian Medical Association, was invited by the Minister of Health, Dr. James McGrath, to meet with him and his colleagues of that department for the purpose of planning the implementation of the Government's policy.

"After a series of meetings of the branches of the Newfoundland Division, C.M.A., throughout the Province, the executive was instructed to assure the Minister of the desire of the profession to co-operate in making this program as successful as the efforts and skills of the doctors can make it.

"However, it was the feeling of the profession that their representatives should stress to the Minister of Health on this occasion, as they did some two years ago, following the Premier's initial announcement of the Children's Health Plan, the serious inadequacies of hospital facilities for the care of children in Newfoundland.

"It is the considered opinion of the medical profession of this Province that the provision of desperately needed additional hospital beds and diagnostic services should have constituted the next step forward in the Children's Health Plan, and indeed that such improvements should have been underway before the plan became operative in the first instance. The profession feels that the public interest is not best served by the extension of a health service which will throw a greater strain than ever on existing facilities, with an increased demand for hospital accommodation, overcrowding and the danger of deterioration rather than improvement in the standard of child care.

"Nevertheless, the Children's Health Plan is the law of the Province, and as it is Government policy to proceed with the Plan despite the above-mentioned shortcomings, the medical profession intends to do everything in its power to maintain the highest level of child care under these circumstances.

"Dr. McGrath and his colleagues in the Department of Health have been most co-operative in meeting the representatives of the profession, and agreement has been reached for the implementation of this phase of the plan."

BOOK REVIEWS

LEUKÆMIA AND APLASTIC ANÆMIA IN PATIENTS IRRADIATED FOR ANKYLOSING SPONDYLITIS. Medical Research Council Special Report Series No. 295. W. M. Court-Brown and R. Doll. 135 pp. Illust. Her Majesty's Stationery Office, London, 1957. 10s.6d.

Those of us concerned in the association of cause and effect, dose and response should not fail to read and re-read this booklet. The authors, backed up by a large team of investigators, have shown that x-rays are leukæmogenic agents.

This report is a classic example of careful statistical study of the findings—leukæmia, aplastic anæmia and myelofibrosis—in a group of 13,352 patients suffering from ankylosing spondylitis treated with x-irradiation. Some 49 patients developed (after a latent period of 4-5 years) one or other of these conditions. The association between the radiation and leukæmia is most

significant, being ten times greater in the patient suffering from ankylosing spondylitis treated with x-rays than in a similar normal population weighted for age and sex, and this after a searching enquiry of all other possible causes.

The dose-response relationship is of great importance, the authors concluding that their evidence shows apparent absence of a threshold effect and a significant rise in the number of cases of leukaemia even with conservative levels of x-ray doses. The implications are that a proportion of individuals who develop spontaneous leukaemia do so from background radiation, and any exposure to radiation above this increases the risk of leukaemia development.

Six appendices give interesting clinical and scientific data. The high standard of the M.R.C. special report series is maintained in this booklet.

BLOOD TRANSFUSION IN CLINICAL MEDICINE. P. L. Mollison, Postgraduate Medical School, London, England. 587 pp. Illust. 2nd ed. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. \$10.75.

It is gratifying to see a second edition of this most informative book. Dr. Mollison gives an account of blood groups from a clinical point of view, descriptions of the effects of transfusion on the circulation and of the survival of the transfused red cell, a background of the knowledge about the results of transfusion in man, and a detailed account of hæmolytic disease of the newborn. In the second edition, most of the chapters have been rewritten. To bring it up to date, chapters have been added on such subjects as the freezing of red cells in glycerol for storage, the uses *in vivo* of red cells labelled with a radioactive substance, and the management of hæmolytic disease of the newborn by exchange transfusion.

This book contains much information of value to the clinician as well as the clinical pathologist.

SYSTEMIC RETICULOENDOTHELIAL GRANULOMA (Acta Radiologica Suppl. 149). Per Westling, Kurt Sundberg, and Gunnar Söderberg; Radiumhemmet, Radiodiagnostic Department, and Radiopathology Institute, Karolinska Sjukhuset, Stockholm. 66 pp. Illust. Acta Radiologica, Stockholm, 1957. Sw.Kr. 25.00.

This is an excellent clinical review which describes 16 of the authors' cases of what this reviewer feels is a disease made needlessly difficult to understand by reason of the many names pathologists have given it, to wit, systemic reticuloendothelial granuloma, systemic reticuloendotheliosis, chronic disseminated nonlipoid reticuloendotheliosis, normocholesteræmic xanthomatosis and histiocytosis X.

The interrelated features of Letterer-Siwe disease, Hand-Schüller-Christian disease and eosinophilic granuloma of bone have been recognized for at least 15 years and it now seems clear that they are diverse manifestations of a single disease process the cause of which is unknown. The transitional features of several of the authors' cases support this concept. The report brings out nothing strikingly new about the disease, but the presentation of 16 case reports emphasizes several points of clinical interest. Not infrequently the initial diagnosis of the pathologist is wrong; in this series, as in others, the biopsy specimen was diagnosed as chronic inflammation, tuberculosis, sarcoma, giant cell tumour or "not diagnostic". Bone involvement occurred most frequently in the skull. Not generally

recognized is the fact that, as illustrated here, the pelvis is next most frequently involved. Lesions often occur in the acetabular region.

The authors point out that the etiology is unknown and that there is no specific form of therapy. They gave supportive care only to the patients with severe generalized disease, and comment that ACTH has been tried, apparently without any definite results. The authors do not refer to reports by Bierman *et al.* (*J. Pediat.*, 40: 269, 1952), who used a combination of antibiotics with ameliorative effects in identical twins with Letterer-Siwe disease, or Bass *et al.* (*Am. J. Dis. Child.*, 85: 393, 1953), who felt that cortisone or ACTH had been of great value in the treatment of four or five cases in children. Although spontaneous regression is known to occur in both bony and soft tissue lesions, the authors give their evidence for believing that radiation accelerates regression in bony lesions. Radiation therapy was of no help in the three cases of diabetes insipidus so treated.

RADIOLOGY OF THE ALIMENTARY TRACT IN INFANCY. Roy Astley, Radiologist, The Children's Hospital, Birmingham, England. 287 pp. Illust. Edward Arnold (Publishers) Ltd., London, 1956; The Macmillan Company of Canada Limited, Toronto. \$8.50.

Dr. Astley has dealt with a rather broad subject in both an interesting and informative manner. This publication should occupy a well-deserved space in the library of both clinician and radiologist. Many of the author's observations and conclusions have been drawn from his work on examination of the gastro-intestinal tract in infants, and this consolidation of knowledge on this phase of paediatric radiology is well worth while and something that has been needed for some time. The subject itself is rather too large to deal with in its entirety in a routine type of textbook. The writer should be congratulated for a comprehensive study well done.

Numerous case histories are coupled with radiographic findings, and adequate reproductions of radiographs give excellent illustration of the many lesions encountered in the examination of the gastro-intestinal tract in infancy. Gastro-oesophageal incompetence is extensively discussed.

INTEGRATED ANATOMY AND PHYSIOLOGY. Carl C. Francis and Gordon L. Farrell, Western Reserve University, Cleveland, Ohio. 641 pp. Illust. 3rd ed. The C. V. Mosby Co., St. Louis, Mo., 1957. \$5.85.

This book is an extensive revision of the textbook of anatomy and physiology previously published by these authors. In it they attempt, wherever possible, to correlate the structure of the various organ systems with the functions they perform. In order to achieve this a drastic reduction in the amount of detail has been carried out, and while this makes the book inadequate for use by medical students, it might well prove useful for schools of nursing and students in physical and health education.

It contains 367 illustrations, the majority of which are useful and informative. Several could well have been omitted, however, as they contribute little information to the students for whom this book is suitable.

The review questions at the end of each chapter will be found useful by the student who wishes to ascertain the amount of information he has retained.

(Continued on page 462)



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(Continued from page 460)

CHILD PSYCHIATRY. Leo Kanner, Professor of Child Psychiatry, The Johns Hopkins University, Baltimore, Md. 777 pp. Illust. 3rd ed. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$9.50.

Much has happened in the realm of child psychiatry since the first edition of Kanner's standard text appeared in 1935. The author revised the work very thoroughly in 1948, and has now taken the opportunity of bringing the textbook up to date. This work is so well known among all those interested in child psychiatry that it requires no detailed description. The writing is of high quality and the book will continue to be most helpful, not only to physicians but also to social workers, law enforcement officers, psychologists, teachers and even ordinary parents. In view of the current interest in the young, and particularly in the mal-adjusted young, the book is assured of as ready a sale in the future as it has had in the past.

SURGERY IN WORLD WAR II: ORTHOPEDIC SURGERY IN THE MEDITERRANEAN THEATER OF OPERATIONS. Oscar P. Hampton, Washington University School of Medicine, St. Louis, Mo. 368 pp. Illust. Office of the Surgeon General, Department of the Army, Washington, D.C., 1957.

This volume is chiefly an account of management of compound fractures of the extremities and of wounds of joints in the Mediterranean Theatre of World War II. The Mediterranean campaign opened with the landings in North Africa of American and British troops on November 8, 1942, and was the first combat experience of the American Armies in the war. The story is told of the development of the "staged-treatment" of compound fractures. Beginning with directives carried forward from the last war, and surgical staffs experienced only in civilian methods, the first fourteen months of trial and error led to a well-integrated program of "staged" management which was carried on into the European theatre with little modification. It is well worth while to look back now at this factual record, as the general principles laid down are still applicable.

In primary surgical treatment chief emphasis was placed on early and meticulous debridement, with whole blood and penicillin administration as supporting measures. The wounds were left open, gross alignment only of the fracture was sought, and splinting for transportation was applied. At the second stage of "reparative surgery", after transfer back to the communications zone, any further debridement was carried out if necessary, reduction of the fracture was achieved (not hesitating to use internal fixation if thought to be of advantage), the wound was closed, and final splinting or traction was applied. Any reconstructive surgery of the third stage was left until transfer back to base hospital was possible and healing was complete. Accelerated but safe closure of compound wounds by secondary suture was the great advance. It had been given limited use in World War I, but the advent of penicillin made it possible as a routine method in the second.

There is more repetition than seems necessary in the different sections of the book, there is lack of clarity in some of the recommendations (e.g. as to the value of and use made of the hanging cast), and for some reason problems of injuries to the spine are not con-

sidered. But there is much of interest and value to anyone dealing with fracture problems.

Illustrations are numerous, are mostly "on the spot" records, and amplify the text clearly. A diagram showing disposition of the various treatment centres and hospitals would aid those not familiar with the American Army medical setup.

X-RAY TECHNOLOGY. Charles A. Jacobi and Donald E. Hagen, Oregon Technical Institute, Oretech, Oregon. 410 pp. Illust. The C. V. Mosby Company, St. Louis, Mo., 1957. \$9.75.

In the main, *X-Ray Technology* is a good introductory text on radiological technique in which the source of material has been gleaned from a review of the good quarterly literature on the subject as well as the authors' personal experiences. Technical procedures have been divided into three sections and each section headed by anatomical studies of this particular group, compiled from anatomical reference texts. The section devoted to dark-room technique, equipment and chemistry is presented in a simple and easily understood fashion, and contains much excellent and informative instruction. The section devoted to elementary physics and electricity, together with the discussions of intensifying screens, Bucky diaphragms and grids, while brief, has been gathered from well-known and authoritative references. Illustrations of this matter, as well as fundamentals of x-ray circuits, have been kept to a simple and readily understandable level, excellent for student technicians, particularly in the early part of their training. The glossary of radiological terminology and definitions is an excellent addition to the publication.

The book is a very good one for student technicians, as it contains a considerable amount of readily understood fundamental information and is an excellent introduction to x-ray technical procedures.

SCIENCE LOOKS AT SMOKING: A New Inquiry into the Effects of Smoking on Your Health. Eric Northrup; introduction by Harry S. N. Greene, Department of Pathology, Yale University. 190 pp. Coward-McCann, Inc., New York, 1957. \$3.00.

This book seems to have been written with the intention of allaying fear that smoking is a factor in producing cancer of the lung and coronary thrombosis. The title identifying the author with "science" could be more appropriately changed to "A Journalist Looks at Some Medical Articles on Smoking" or perhaps more simply "Boo to the Cigarette Scare".

Much of the contents consists of paragraphs quoted from unidentified articles (there is no bibliography). There is much repetition and an obvious bias towards disclaiming the dangers of tobacco. In the chapter entitled "Some Medical Facts", confusion is produced by quoting death rates without stating whether they are per year or per lifetime. If science had looked at smoking, it is to be hoped that it would have dispassionately condensed and explained the important articles about research on the danger or safety of smoking. It might thereby have rendered a better service to the public and made a better use of one hundred and ninety pages. It may be noted from the jacket that the author is at present "Feature Editor of Scope Weekly, a leading national medical newspaper".

(Continued on advertising page 51)

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1. Blank, P., and Boas, H.: Ann. West. Med. & Surg. 6:376, 1952.
2. Piper, C. E., and Nicklas, F. W.: Indust. Med. 23:510, 1954.



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BOOK REVIEWS

(Continued from page 462)

**DIE EXPERIMENTELLE VIRUSDES-
INFEKTION: ERGEBNISSE UND
METHODEN** (Experiments in Virus
Disinfection: Results and Techniques).
(Beiträge zur Hygiene und Epidemio-
logie, No. 10.) K. F. Bingel, Institute
of Hygiene, Heidelberg. 83 pp. Illust.
Johann Ambrosius Barth Verlag,
Leipzig, 1957. DM 9.

In this brief monograph, Professor Bingel has collected all the references he could find in the world's literature to virucidal agents. These agents are classified and the results of the literature survey are described mainly in tables, with elaboration in the text. Agents described include ultraviolet light, formalin, alcohol, glycerin, phenols, mercury, iodine, chlorine, reducing agents, bile and bile salts. The influence of the medium on protective agents is noted, as well as relationships to concentration and time of action. Differential resistances among virus groups are described, and the technique of investigation of virucidal effect is outlined.

**CLOSED RANKS: An Experiment in
Mental Health Education.** Elaine
Cumming, Sociologist, and John Cum-
ming, Psychiatrist, Harvard Univer-
sity. 192 pp. Harvard University
Press, Cambridge, Mass.; Oxford
University Press, London, 1957. \$3.85.

This is a book with a twist, one found all too rarely in current scientific literature. It is the report of an experiment that failed. From the failure, however, the authors acquired valuable insights into the function of prevailing community attitudes towards mental illness and those suffering from it.

The authors undertook a study of two small Canadian communities, one exposed to a mental health education program carried out under their supervision, the other serving as a "control". The six-month education program, thoughtfully designed and efficiently carried out, was found to have left virtually unchanged the degree of community toleration of mental illness and mental patients, as measured by a before-and-after study with intensive questionnaire and interview techniques. In addition to the nearly complete failure of the program, the investigators, initially accepted, found themselves confronted with a rising tide of anxiety and hostility, culminating in a semi-official invitation to quit the community.

In an attempt to explain their failure, the authors re-examine the basic assumptions underlying the working principles employed in men-

tal health education. They conclude that some of these, for example, their concept of the layman's attitudes towards human behaviour and its causes, were in fact more or less erroneous. Recognition of these false assumptions enabled the authors to re-evaluate and adjust their program.

They discovered that a pattern of denial, isolation and insulation characterized the community's attitudes to mental illness, and define the ways in which this pattern explicitly and implicitly functions as a factor in maintaining community equilibrium

(Continued on page 52)

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* Figures taken from article by Kenneth Phillips, M.D., F.A.C.P., in *GENERAL PRACTICE*, The Medical Journal of the West, March, 1957.



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The Faculty of Medicine of the University of Toronto offers advanced graduate courses in Medicine, Surgery and Obstetrics and Gynaecology, to be held over a six weeks' period, from August 18th to September 26th, 1958.

These are full time courses and will be given for a minimum of ten and a maximum of twenty-five students in each group.

The fee will be \$225.00 (Canadian Funds), payable in advance to the Chief Accountant, University of Toronto.

Further information may be secured from the Division of Postgraduate Medical Education, Faculty of Medicine, University of Toronto, to which applications for admission should be made before June 15th, 1958.

BOOK REVIEWS*(Continued from page 51)*

in the face of the disturbing influence of mental illness.

In concluding a book that makes a major contribution to the understanding of community attitudes towards mental illness, the authors give a number of valuable practical suggestions for mental health education derived from their own experience in the field.

REVIEW OF PHYSIOLOGICAL CHEMISTRY. Harold A. Harper, Associate Professor of Physiological Chemistry, University of California School of Medicine, San Francisco. 376 pp. Illust. 6th ed. Lange Medical Publications, Los Altos, California, 1957. \$4.50.

Not so long ago, physiological chemistry was essentially a pure science course in medical schools and reference to clinical application was incidental. Those days have passed. Physiological chemistry, usually referred to as biochemistry, is now an integral part of the practice of medicine. Advances in every branch of medicine are the result of biochemical research. The entire field of physiology is a series of biochemical reactions, and pathological phenomena result from disturbances of these reactions. The author's intention in writing this review, which has appeared for the past few years in revised form every two years, has been to present critical and concise summaries of what is considered essential in this very rapidly expanding specialty. He has achieved this objective, particularly in the reviews on the metabolism of nucleic acids, porphyrins, carbohydrates, amino acids and the chemistry of the hormones. It is a review, as the name implies, and not a standard text.

The book should serve not only as an excellent reference for those preparing for specialty examinations, but also for those who wish to keep abreast of this branch of medical science, which now contributes so much to the understanding and practice of all phases of medicine.

MODERN PERINATAL CARE. Leslie V. Dill, Diplomate of the American Board of Obstetrics and Gynecology. 309 pp. Illust. Appleton-Century-Crofts, Inc., New York, 1957. \$6.50.

The aim of this book is to present a crystallization of present-day thought on antepartum and postpartum care. There are many good chapters in the book. The medical diseases and their effects on pregnancy are covered in detail and from the practical aspect.



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The best chapters in the book are the last three—"Obstetric Records", "The Practice of Obstetrics and the Law" and "The Ethics of the Catholic Church as they pertain to Obstetrics". The problems treated here are very practical and pressing, and there is no evidence of lack of decision in their management. From "The Practice of Obstetrics and the Law" the following quotes are taken: "An obstetrician or general practitioner who attempts to handle a serious cardiac patient through pregnancy without the help of a cardiologist may be considered negligent." In the discussion of Caesarean sections and management of breech presentations, it is stated: "More frequent use of gynaecological consultation without charge to the patient will render better results as to the position and more peace of mind to the patient." There are many other important pieces of advice in these last three chapters.

Apart from this, the coverage is sketchy; such major and controversial antepartum problems as abruptio placentae and placenta praevia are omitted, while a chapter on the 4th stage of labour is included. This would be valuable if it only attempted to present the importance of careful

(Continued on page 54)

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BOOK REVIEWS

(Continued from page 52)

observation for the first few hours after delivery. This it does, but under the same title it describes the routine management of the first 10 days in the puerperium. This rather illogical type of confusion of thought permeates the entire book.

The author states specifically that his text is a crystallization of modern thought. The word "crystallize" means figuratively to become settled and definite in form. This is about the one thing with which this book does not seem to be concerned. On any controversial point the author quotes many opinions on one side and an equal number on the other and then comes down in favour of neither. This is nowhere more evident than in the therapy of abortion. In the classification of heart disease, three schemes are detailed and none decided upon. This method has one advantage — the detailed and well-documented bibliography.

This book would probably be rather confusing for the medical student, but everyone interested in ob-

stetrics should read the last three chapters.

EXPERT COMMITTEE ON INSECTICIDES, Seventh Report. WHO Technical Report Series No. 125. 31 pp. World Health Organization, Palais des Nations, Geneva, 1957. \$0.30.

This is a report of the seventh session of the World Health Organization's Expert Committee on Insecticides, which was held in July 1957. Two matters of public health importance are considered: the development of resistance by insects to insecticides; the use of insecticides for quarantine purposes on aircraft.

Resistance to insecticides is defined as the development of an ability by the insect to tolerate doses which would prove lethal to the majority in a normal population of the same species. This is of importance in public health because insecticides are used in the control of vector-borne diseases, as, for example, the use of DDT in malaria control. Resistance to chlorinated hydrocarbon insecticides has been reported widely. Resistance to other insecticides has also been reported but appears more local.

Proposals for international action are made.

The mode of action of chlorinated hydrocarbon insecticides is not well understood. Physiological and biochemical changes in resistance are less well understood. Enzymatic destruction of the insecticide appears to be the major factor. In general, once species-resistance has appeared, a major gene is involved. More research on these biological and genetic aspects is indicated. Alternative control methods for resistant insects are mentioned.

The use of insecticides for quarantine purposes of aircraft comprises the second part of the report. Insecticides used inside aircraft must be free from fire hazard and from danger to humans. Spraying should not be done while passengers are in the aircraft or while in flight.

There are two annexes to the report. The first lists several aerosol formulations for use in aircraft. These are based on DDT and pyrethrum. Procedures for testing of aerosols are given in technical detail in the second annex.



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1. The Food Exchange Lists referred to are based on material in "Meal Planning with Exchange Lists" prepared by Committees of the American Diabetes Association, Inc. and The American Dietetic Association in cooperation with the Chronic Disease Program, Public Health Service, Department of Health, Education and Welfare.

Individuals concerned with insecticide resistance and with disease vector control will find this report of value.

HUMAN BLOOD COAGULATION AND ITS DISORDERS. Rosemary Biggs and R. G. Macfarlane, Radcliffe Infirmary, Oxford, England. 476 pp. Illust. 2nd ed. Charles C. Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$10.25.

A fully satisfactory understanding of blood clotting is still beyond our grasp, in spite of intensive studies of this bewilderingly complex subject. In addition to the difficulty of studying complicated phenomena by means of an end result, one is faced with an appalling confusion in terminology. The authors have attempted "to reduce this profusion (. . . of aliases, false clues, conflicting statements and fallacious deductions) to the smallest possible residue of useful and sober facts; . . . and to present what is known about the probable ways in which the things which remain react together to produce a clot". They have succeeded admirably.

The first half of this book presents a discussion of the theoretical and experimental bases of our knowledge of clotting. The various theories of coagulation are clearly outlined. The components of this reaction such as fibrinogen and prothrombin are discussed in detail, along with the tests for their estimation and a critical evaluation of the validity of these tests. The second half comprises descriptions of various diseases in which thrombosis or bleeding are a prominent feature, and is of particular interest to the clinician. Treatment is by no means neglected, and the fads, which have pervaded and unfortunately still do pervade this field, receive pungent comment. Merely to read the succinct summaries at the end of each chapter would improve the knowledge of most of us. The appendices on technical methods will be particularly useful to the hæmatologist and to the laboratory.

In these days when a pedestrian and turgid style is regarded as the hallmark of scientific writing, it is a pleasure to find wit mixed with wisdom. A perusal of the introduc-

tion might well profit all researchers, new and used. This book is highly recommended.

A THEORY OF DISEASE. Arthur Guirdham. 204 pp. George Allen & Unwin Ltd., London, 1957. 21s. 0d.

A title such as "A Theory of Disease" is apt to produce misgivings and even a certain amount of resistance in the mind of the reviewer. Further acquaintance with Dr. Guirdham's book will, however, go far to overcoming this resistance, for it is full of interesting and thought-provoking observations, quite apart from the general theory outlined. In addition, Dr. Guirdham writes persuasively and well, though the last chapter of the book is perhaps not as entertaining as the rest.

In brief, the theory which the author proposes as an explanation of man's general vulnerability to adverse factors sees the formation and awareness of personality as a factor inducing morbidity. The author notes that, in progress towards adult life, the stages at which significant steps in

(Continued on page 56)



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BOOK REVIEWS

(Continued from page 55)

personality development are taken are most liable to morbidity. The author notes the variations in disease pattern in different civilizations. Although the Asian populations are menaced by infectious disease, they are not subject to the stress diseases, functional diseases or neuroses of Western man with his greater cult of the personality, as opposed to the Eastern doctrine of annihilation of self. It is suggested that disease patterns are often more conditioned by social setting and religion than by racial factors. Thus the increased tolerance of neurotics by Western society has been associated with a higher incidence of this disease pattern.

The author later develops the thesis that the intensity of repression in an individual and the strata of personality at which the effect of repression is exercised are cardinal factors in determining whether a neurotic, functional or organic stress disease will develop. With less intense repression and a conflict relatively high in the unconscious, a neurosis is likely to result. With more

intense repression and a conflict at the maximum depth of the unconscious, organic disease is more likely.

This book is well worth reading, quite apart from its central theme, for it is full of interesting ideas presented in an unusual way.

PSYCHIATRY IN THEORY AND IN PRACTICE. Beulah Chamberlain Bos-selman, University of Illinois College of Medicine, Chicago, Ill. 150 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. \$4.50.

This brief but comprehensive volume, which is in the American Lecture Series format, is a course of tape-recorded interviews given to the first-year resident psychiatric group at the Illinois Neuropsychiatric Institute.

The history of psychiatry is reviewed from Hippocrates through Galen, mediæval witchcraft, and the days of moral treatment of insanity through to Freud and Meyer. Although bald, this section of the book provides a useful background. The author then starts with character development and neurosis, dealing in some detail with the development of character patterns. This approach,

while open to criticism as a portal of entry into clinical psychiatry, is a useful and original one, serving as a treatment of the background of mental illness on which more clear-cut and delimited neurotic and psychotic processes are superimposed. The neuroses are divided into two sections, i.e. "somatic neuroses" (anxiety state, hypochondriasis, conversion hysteria) and "symbolic neuroses" (anxiety hysteria and compulsive-obsessive neurosis). It may be useful to introduce this autoplasmic and alloplastic differentiation between these different types of neurotic patterns, but it assorts ill with the present standard nomenclature of neurotic and psychiatric reactions which is conveniently appended at the end of the volume.

One must, at this point, regret that the author neglected to give much space to the psychosomatic conditions. Her treatment of psychotic processes is quite extensive and useful. The syndromes of brain damage, while handled intelligently, are underemphasized for those beginning psychiatry.



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There is a chapter on psychiatric science and the good life which is very simple and points the way to a needed and meaningful collaboration between science, psychiatry and religion. The keynotes of integration and simplicity are maintained forcefully and effectively throughout the book.

This sympathetic presentation of the contribution of all branches of psychiatry would be most helpful to those entering psychiatry from other fields or refurbishing knowledge, for whatever purpose. It is a good little book which would bear reading and re-reading. There are some typographical shortcomings.

HEREDO-RETINOPATHIA CONGENITALIS: Monohybrida Recessiva Autosomalis—A Genetical-Statistical Study. Monograph in Honour of the 60th Birthday of Torsten Sjögren. Carl Henry Alström and Olaf Olson, Stockholm. 179 pp. Illust. Berlingska Boktryckeriet, Lund, Sweden, 1957.

This monograph discusses what may be a new clinical-pathological entity described only once previously in 1869 by Leber. The name suggested for this condition was heredo-retinopathia congenitalis monohybrida re-

cessiva autosomalis. The authors studied 105 families including 175 cases. They recorded their clinical findings, laboratory electro-retinographic studies, and the genetical statistics. No pathological studies were made. All the case histories are summarized in the appendix. An excellent and complete bibliography is attached. Numerous tables and maps are included but no photographs are shown.

The disease caused 10% of blindness in the blind children who reached school age in Sweden. It was characterized by blindness from birth or in the first year of life. There was associated nystagmus in varying degrees, the eye movements being more frequent in those patients with the least impairment of vision. Central vision was decreased with central scotomata but there was no other characteristic visual field defect. The ophthalmoscopic findings, when present, consisted of small, round, irregular pigmented or pale spots in the periphery. The pigmented areas later showed larger foci or patches involving the central part in the late stages. Eventually retinal and choro-

idal atrophy revealed bared white sclera. In the older cases there was some pallor, blurring and atrophy of the discs and narrowing of the vessels. There were no neuro-psychiatric or endocrinological complications.

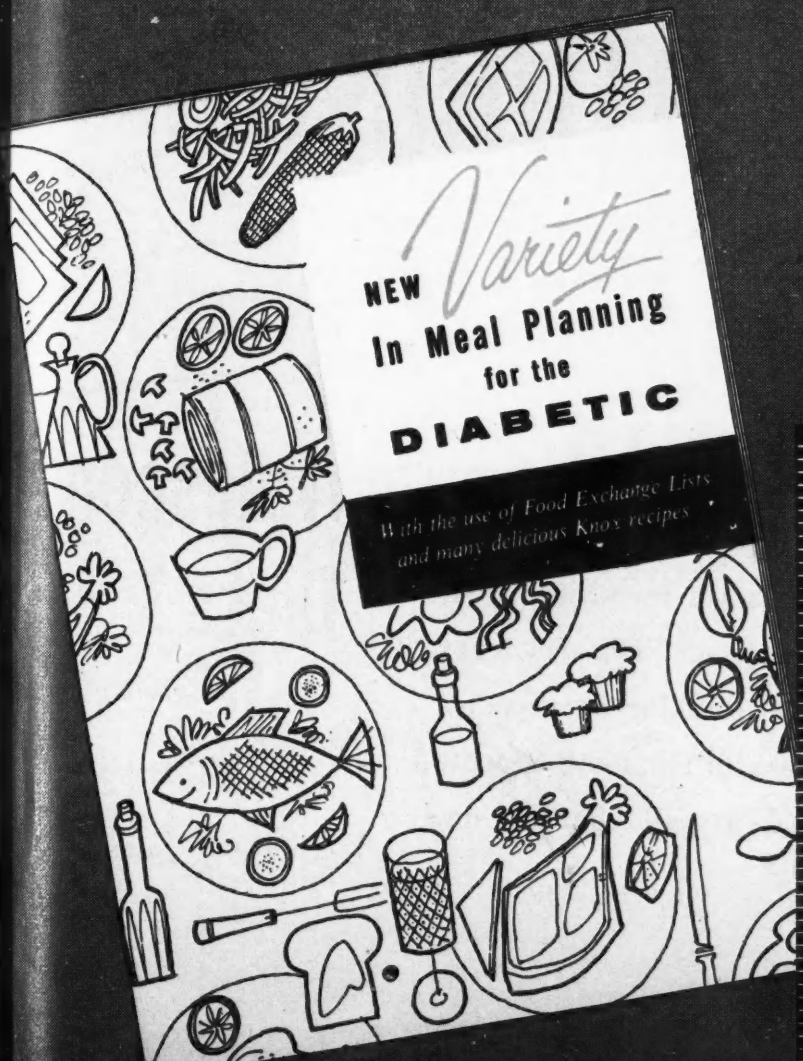
Ocular complications included cataracts, keratoconus and gradual amaurosis, not accounted for by medial opacities. In the youngest age group incipient cataracts were present in 14%. Of the patients over 45 years of age, 70% had cataracts. Bilateral keratoconus was observed in 2% of the early cases and one-third of all the patients over 45 years. Three-quarters of the patients over 45 years were totally blind.

No postmortem material was examined.

Electroretinograms were extinguished in 92% of 62 patients studied, irrespective of whether or not retin-ochoroidal changes were present. Five patients had normal or sub-normal electroretinograms.

Genetical studies of 105 families, including 175 cases of this condition, indicated that the disease followed a monohybrid autosomal and recessive

(Continued on page 58)



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BOOK REVIEWS

(Continued from page 57)

sive mode of inheritance. The frequency of the disease was 3 in 100,000 of the general population. There was equal sex distribution. Consanguinity was an important factor. There were first-cousin matings in 17 cases, second-cousin matings in 6 cases, and in 22 families a more distant relationship between parents. This inbreeding was five times higher than that expected in the general population.

PERIODONTIA: The Art and Science of Examination and Diagnosis of Periodontal Diseases. Henry M. Goldman, Director of the Riesman Dental Clinic, Beth Israel Hospital, Boston; and D. Walter Cohen, Assistant Professor of Oral Medicine and Oral Histopathology, School of Dentistry, University of Pennsylvania. 535 pp. Illust. 4th ed., The C. V. Mosby Company, St. Louis, Mo., 1957. \$12.50.

As stated in the preface to this fourth edition, "The objectives of this revision are to present the principles and procedures of examination and diagnosis of periodontal diseases as well as their etiology . . .". The pre-

face also states, "In this fourth edition, therapy has been entirely eliminated. Treatment of periodontal diseases is thoroughly discussed in a separate book entitled 'Periodontal Therapy' (by Goldman, Schluger, and Fox) . . .".

This particular text gives a comprehensive report on present knowledge concerning the anatomy, histology, physiology and pathology of the periodontal tissues. There is an excellent section on the etiology of periodontal diseases with particular reference to the role of bacteria in periodontal disease. Precise methods for direct clinical examination of the periodontal tissues are described and the interpretation of radiographs of the periodontal tissues is well outlined. There are also sections on the prevalence and manifestations of periodontal disease in children, and on necrotizing ulcerative gingivitis (Vincent's infection or trench mouth).

This text would be of particular value to the dental student and practitioner, and it would serve as a good reference to practitioners and students in medicine. Lack of description of treatment methods would

be a disadvantage to the physician who would like to have a single quick reference for use in daily practice.

In addition to providing comprehensive and authoritative information, the text provides excellent illustrations of all the main points which are discussed.

TASCHENBUCH DER ARBEITSMEDIZIN (Pocketbook of Occupational Medicine). H. Buckup, Bochum. 272 pp. Illust. Georg Thieme Verlag, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1957. \$6.40.

This is a small dictionary of industrial medicine arranged alphabetically. Because of the varied problems arising in industrial medicine, there is a great mixture of entries involving substances, technical processes, physical factors, legislation and social science. Typical entries for products used in industry indicate associated risks, symptoms and signs, treatment, and legislation in Germany. The net is cast very wide, for entries include cat scratch disease and scurvy. Legislation and references given naturally concern Germany, hence the book would have a limited use in Canada, even for German-speaking physicians.



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THE GLAUCOMAS. H. Saul Sugar, Director of Glaucoma Clinic, Receiving Hospital, Detroit. 516 pp. Illust. 2nd ed. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1957. \$13.50.

Because of the rapid progress in the field of glaucoma in the six years since the first edition of this book, this revised second edition is most welcome. Its revisions are sufficiently extensive to render the first edition quite obsolete. It is larger and more comprehensive than its predecessor and distinctly superior.

Developments in tonography have resulted in a separate chapter on this subject. The application of the newer drugs and the new surgical procedures are described in detail. The chapter on chemistry of the aqueous, written in collaboration with Everett Kinsey, gives a clear and up-to-date account of this ever-changing subject.

The author has made a happy choice in the length and scope of the new edition. Because of the vastness and complexity of his subject, and because of the new developments and controversies affecting so many facets of it, he could have made it

even more encyclopædic; but then more would have been lost than gained. The carefully selected yet extensive bibliography following each chapter adequately serves to guide readers wishing to explore particular facets more fully.

It is important that a single text be devoted to the glaucomas. Dr. Sugar's book is one of the few to fill this need and does so most satisfactorily. It is difficult to see how any practising ophthalmologist or post-graduate student can afford to be without this text. When one considers the rapid and exciting progress that can be expected to continue in glaucoma work, one sympathizes with the author, but hopes that he will continue to turn out further editions of this excellent treatise, whenever conditions warrant.

CONTACT LENSES. Theo. E. Obrig and Philip L. Salvatori, Obrig Laboratories, Inc., New York, N.Y., 1957. 780 pp. Illust. 3rd ed.

The third edition of this well-known book is more comprehensive than the earlier editions. The anatomy and

physiology of the cornea and adjacent structures are discussed; the optics of contact lenses are then described. Following this the various instances in which contact lenses may be of use are mentioned, and considerable space is devoted to the history of their development. Various advances leading to the modern lenses are described.

A large section of the book presents methods of measuring and fitting contact glasses. The details of the taking of casts with negocoll and moldite are described. The production of the lenses and the final fitting is then discussed in detail. With this book it is possible to have a fair understanding of the modern procedures in the fitting of contact glasses.

At the end of the book is a large section giving the details of the patents at the United States Patent Office which cover the construction of contact lenses. There is an adequate bibliography and good index. For those fitting and making contact glasses, this is a most useful book.

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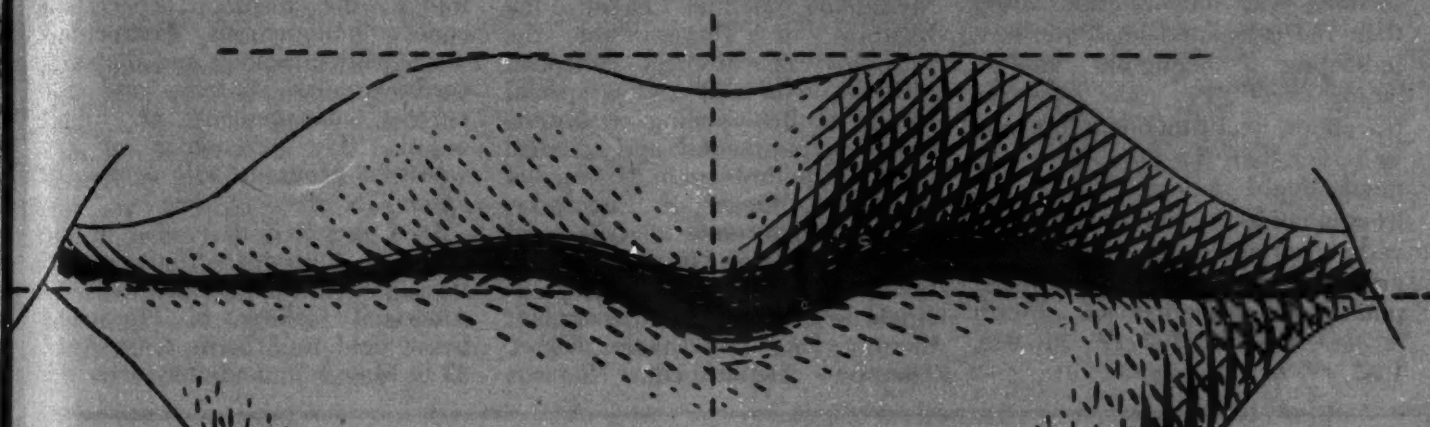


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MEDICAL NEWS in brief

(Continued from page 433)

**FUNCTIONAL RESULTS
AFTER PARTIAL
PULMONARY RESECTION**

A series of 13 patients who had resection of one or two lung segments and of four other patients who had more extensive resections have been investigated by broncho-spirometry in the supine position before operation, three months after operation, and 18-39 months postoperatively. The definitive functional loss for the smaller resections was only slightly larger than the calculated anatomic loss, indicating a negligible "thoracotomy effect". For more extensive resections, final functional loss may be larger than the number of segments might indicate. This serves to emphasize the importance of an early, energetic, and rational program of physiotherapy following pulmonary resection.—G. Birath *et al.*: *Am. Rev. Tuberc.*, 76: 983, 1957.

**FIFTH INTERNATIONAL
CONGRESS OF
INTERNAL MEDICINE**

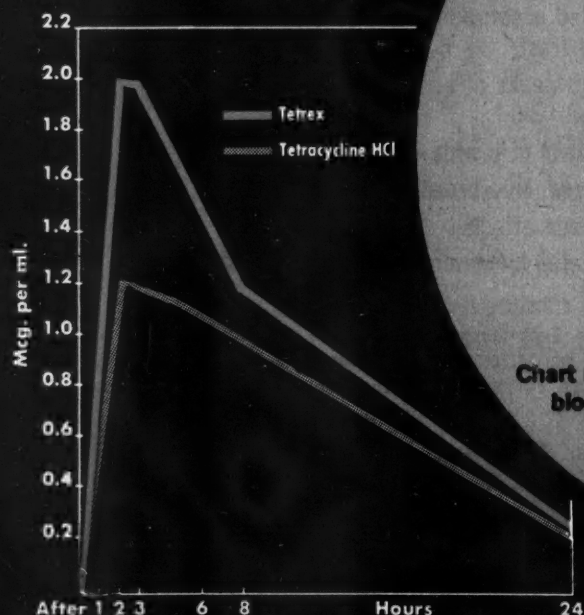
The world's largest international gathering of scientists and clinicians concerned with clinical medicine will take place in Philadelphia, Pa., on April 24-26, when the Fifth International Congress of Internal Medicine will be held. In addition to America's leading internists, 81 speakers representing 27 other nations will participate in the scientific program.

The speakers from the Soviet Union will include Dr. Alexander L. Myasnikov, Scientific Leader of the Institute of Therapy of the Academy of Medical Sciences, Moscow, who will give a special lecture at the opening session on "Some Experimental and Clinical Data on the Problem of Myocardial Infarction"; Dr. P. E. Lucomsky, Professor of Internal Medicine and Head of the 2nd Moscow Medical Institute, Moscow, who will participate in a panel on anticoagulant therapy; Dr. L. Varshamov, Chief, Therapy Department, Saratov

Medical Institute, Saratov, who will speak on "Coronary Insufficiency" in a symposium on cardiac diseases; and Dr. W. S. Nesterov, Professor of Medicine, Woronezh, who will speak on "Clinical and Experimental Data on Cardiac Aneurysm" in a symposium on vascular diseases.

The scientific program will include panels and symposia. The subjects of the panels include: anticoagulant therapy, synthetic steroid compounds used in rheumatoid arthritis, rehabilitation. The symposia will discuss cardiac diseases, vascular diseases, hæmatology, the medical aspects of cancer, poliomyelitis, gastroenterology, endocrinology and diabetes, cardiovascular surgery, and the current management of tuberculosis. The remainder of the scientific program will consist of special lectures.

It is expected that most of the Congress delegates will also attend the 1958 Annual Session of the American College of Physicians being held in Atlantic City, April 28 to May 2, immediately after the

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studies on 188 patients

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Congress. An official post-Congress tour to medical centres and points of historic and cultural interest in Washington, Baltimore, Detroit, Ann Arbor, Niagara Falls, Boston and New York from May 7 to May 15 has also been arranged.

Information and registration forms for the Congress can be obtained by writing Dr. E. R. Loveland, Secretary-General, Fifth International Congress of Internal Medicine, 4200 Pine Street, Philadelphia 4, Pennsylvania.

OTOLARYNGOLOGY CONGRESS IN BRUSSELS

Otolaryngologists who plan to visit Europe this summer and perhaps to visit the International Exhibition in Brussels, will be interested to know that the Belgium Society of Otology, Rhinology and Laryngology is arranging a congress in Brussels from June 2-7. This will contain the first European meeting of the International Commission for the Study of Cancer of the Larynx, a meeting of the

Société de broncho-œsophagologie de langue française, a meeting of the International College of Experimental Phonology, a session on functional surgery of the ear and a festival of scientific films in the E.N.T. field. As an additional attraction, participants are granted special priority for accommodation and access to the International Exhibition. Further information from Dr. Henschel, 19 rue de Fétille, Liège, Belgium.

VARIOLA IN GERMANY

A 28-year-old electrical engineer developed smallpox on returning to Europe from India and Pakistan. This was the first case of smallpox reported in Germany in 10 years. Careful epidemiologic and virologic studies were carried out, and virulence tests proved that this disease was due to the virus of variola major. The mildness of the disease (varioid) was due to his previous vaccinations, the last of which was done before his departure from Germany to India a

year earlier. Inquiries at the various points where his plane touched down on his return flight failed to reveal any other cases of smallpox, nor did any members of his family or his friends develop the disease in spite of intimate contact with the patient during the first day of his acute illness.—K. H. Andres *et al.*: *Deutsche med. Wchnschr.*, 83: 12, 1958.

SUCTION BOWL REPLACING OBSTETRICAL FORCEPS

From Stockholm comes the news that cases which hitherto required the use of obstetrical forceps are now generally handled in Sweden by means of a suction bowl which is attached to the head of the fetus. A paper reporting on 600 such deliveries was presented at Gothenburg University recently. This new apparatus is the result of the combined efforts of a physician and an engineering scientist. It makes anaesthesia un-

(Continued on page 64)

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administration.



MEDICAL NEWS in brief (Continued from page 63)

necessary for this type of delivery. By means of a special apparatus known as a parturiometer and attached to the mother's abdomen, contractions are measured automatically and the suction bowl is applied only when they lose their strength. The device was tested for five years before being released on the market; it is now used in many countries and is patented all over the world.

POSTGRADUATE COURSES, AMERICAN COLLEGE OF PHYSICIANS

The American College of Physicians has arranged the following postgraduate courses for the spring of 1958: Course 1, Selected Topics in Internal Medicine, March 3-7; Course 2, Modern Methods of Auscultation in Cardiac Diagnosis, April 10-12; Course 3, Cardiovascular Disease, April 14-18; Course 4, Current Views in the Diagnosis and Treatment of Cardiovascular

Diseases in the Child and the Adult, May 12-16; Course 5, Principles and Practice of Internal Medicine, June 2-6; Course 6, Selected Topics in Hematology for Internists, June 9-13; Course 7, Internal Medicine, June 16-20. Where facilities are available, these courses will be open to non-members with adequate preliminary training, and an effort will be made to accommodate physicians from countries other than the U.S.A. A registration form and a copy of the Final Bulletin may be obtained from E. R. Loveland, Executive Secretary, 4200 Pine Street, Philadelphia 4, Pa.



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AMERICAN ACADEMY OF DENTAL MEDICINE

The American Academy of Dental Medicine will hold its 12th Annual Meeting in Montreal at the Sheraton-Mount Royal Hotel on May 29, 30 and 31, 1958. The topic of the scientific sessions on Thursday, May 29, will be "The Dentist and the Endocrine Problem". At the morning session, the problems of the dentist will be outlined by Robert F. Harvey, D.D.S., Lecturer, Periodontia Department, Faculty of Dentistry, McGill University. Dr. Allen Gold, Assistant Physician, Montreal General Hospital, will present the viewpoint of the endocrinologist; and Dr. Gerald W. Halpenny, Chief, Department of Medicine, Queen Mary Veterans Hospital, that of the internist. The discussion will be continued at the afternoon session. The viewpoint of the obstetrician will be presented by Dr. J. Lorne Macarthur, Associate, Montreal General Hospital, and that of the pharmacologist by Dr. Kenneth I. Melville, Professor of Pharmacology, McGill University. A feature of the dinner on Thursday evening will be the presentation of awards to honorary members of the Academy, Dr. Adélard Groulx, Director of the Health Department of Montreal, and Dr. Don Gullett, Secretary of the Canadian Dental Association.

The session on Friday morning, May 30, will be held in the amphitheatre of the Montreal Children's Hospital and will be given over to a discussion of "The Dentist and the Cleft Palate Problem" by the Cleft Palate Team of the Montreal Children's Hospital, under the

(Continued on page 66)



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MEDICAL NEWS in brief
(Continued from page 64)

chairmanship of Dr. F. M. Woolhouse, Director of Plastic Surgery. The team, which includes some 13 members, will outline the over-all treatment plan and rehabilitation of the cleft palate patient.

On Saturday morning, May 31, the subject will be "The Dentist and the Dermatology Problem". Dr. Lemuel P. Ereaux, Associate Professor of Medicine, McGill University, will discuss the inflammatory diseases of the mucous membranes of the mouth; and Dr. Georges Leclerc, Assistant Professor of Medicine (Dermatology), University of Montreal, will speak on contact dermatitis of the face and hands.

Further information from: Dr. Louis J. Rosen, Convention Chairman, 3465 Côte des Neiges Road, Montreal, Quebec.

INTERNATIONAL JOURNAL
OF HEALTH EDUCATION

The *International Journal of Health Education* has recently appeared from Switzerland. It is planned to publish this in English and French editions quarterly, and the aim of the periodical is to facilitate exchange of experiences, ideas and news concerning health education and to bring to health workers and health education specialists practical information which they can utilize. It covers the following sections: health education in practice; professional training in health education; studies and research; methodology; international achievements; and national reports. The first issue (January 1958) carries messages from Professor Jacques Parisot and from the Director-General of WHO, Dr. M. G. Candau. It has articles on health education from many parts of the world including Japan, Turkey, Ecuador, and the Soviet Union. There is an excellent contribution entitled "Doctor Means Teacher" by Dr. John Burton of London and an interesting summary of the year's achievements in health education by WHO, written by the Chief of the Health Education Section, Miss Helen Martikainen. This new periodical is the official organ of the International Union for Health Education of the Public, with headquarters in Paris. Information from

the Editor, 3 rue Viollier, Geneva, Switzerland. Subscription: 12 Swiss francs per year.

INTENSIVE TREATMENT
UNIT FOR GERIATRIC
PATIENTS

The third intensive treatment unit for newly admitted geriatric patients organized by the New

York State Department of Health was opened on February 17 at Hudson River State Hospital. The unit is designed to treat patients with psychiatric conditions who are over the age of 65 years. The objective is to prevent where possible the continued hospitalization of elderly people who may with intensive treatment be sufficiently helped and rehabilitated to return to society. Where this is not

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folic acid)

3

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(calcium, iron, mag-
nesium, manganese,
copper, zinc, iodine,
molybdenum,
cobalt)

feasible, it is hoped that a percentage of these patients will recover sufficiently to be placed in family care homes supervised by the hospital social service department.

The Hudson River unit has two wards, one for each sex, with a total capacity of 60 beds. The intensive treatment program includes medical and nursing care, physiotherapy, occupational ther-

apy, psychotherapy and the use of tranquillizing agents. Counselling with a social worker is provided.

AMERICAN RESEARCH NO LONGER STARVED FOR FUNDS

With \$400 million available in 1957, leaders in the U.S.A. say that for the first time in history, medical research is no longer starved

for funds, according to a nationwide survey in the U.S.A. released by Merck & Co., Inc. The survey solicited opinions on the present state of medical research from a selected sample of professional and lay leaders. "The American people have been very generous in their support of research in the health field, nearly doubling the funds for this purpose in the past five years," John T. Connor, President of Merck, said in announcing the result of the survey. "However, there are islands of poverty in this sea of plenty. Basic research is being neglected, medical education is in danger of being strangled, brainpower is in short supply."

The persons interviewed were carefully selected to assure that all major fields and types of activity and pertinent scientific disciplines were proportionately represented. The interviews were anonymous and respondents were encouraged to talk freely and frankly about any aspect of the problems of medical research they deemed important. The survey showed that the field of medical research had grown so fast under the impact of new funds in the past few years that, though major problems have been identified, there was now a great need to work out some agreed solutions. The constant need of stressing the importance of basic research was pointed out as a major problem. "Many criticize the general tendency," the report states, "to organize medical research into disease categories (cancer research, polio research, etc.) and feel that much neglect of basic research stems from this practice. Some feel that U.S. Congressional pressure has tended to force the field in this direction."

The new abundance of research funds is drawing topnotch people away from teaching, adding a substantial load to the already overburdened administrative budgets of medical schools and rapidly increasing the universities' dependence on the government, from which most of their outside money is now coming. This enrichment of research at the expense of medical teaching was a source of serious concern to several educators. The report says that, though there is wide rejoicing over the fact that adequate funds for research are

(Continued on page 68)

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Calcium Lactate	1 Gm.
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Vitamin A	6000 U.S.P. Units
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Thiamine Mononitrate (B ₁)	3 mg.
Riboflavin (B ₂)	3 mg.
Pyridoxine HCl (B ₆)	3 mg.
Vitamin B ₁₂ (cobalamin concentrate)	3 mcg.
Niacinamide	25 mg.
d, Calcium Pantothenate	5 mg.
Folic Acid	0.5 mg.
Menadione (K)	1 mg.
Vitamin E (dl, alpha tocopheryl acetate)	1 Int. Unit
Magnesium	3 mg.
Manganese	1 mg.
Copper	1 mg.
Zinc	1 mg.
Molybdenum	0.2 mg.
Iodine	0.1 mg.
Cobalt	0.1 mg.

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MEDICAL NEWS in brief

(Continued from page 67)

available for the first time, medical schools occasionally turn down grants because it costs too much to accept them. New researchers have to be trained; space, services and overheads have to be provided.

This recent plethora of means has resulted in a situation where brains are now much scarcer than dollars. Low pay was once the most critical factor affecting the shortage. "Most feel that there is a financial burden placed on those

competent people who elect to enter or stay in the research field," the report states. The hardest men to find, apparently, are the creators. This point is well illustrated by this quotation from an interview: "Research, in order to be of value and produce new scientific achievements, must be guided by dreamers who have a very full knowledge of pathology, pharmacology and other disciplines. The number of such men in the world is woefully limited—the kind of men who come up with so-called cockeyed ideas, rather

than orthodox ideas. Orthodox ideas lead to nothing."

MEDICINE IN BEAUTY INSTITUTES

An interesting comment on the illegal practice of medicine in beauty parlours and institutes appeared recently in the *Revue du Praticien* (8: 324, 1958), under the signature of Mr. Bernard Piédelièvre, Barrister at the Court of Appeal of Paris. Two judgments were rendered in 1957 against a well-known Parisian beauty institute condemning the directors and the personnel for illegal practice of medicine. It appears that masseuses and beauticians used electro-coagulation, ultraviolet rays, infrared light, galvanic current, disinfecting solutions and paraffin baths for the treatment of cellulitis, acne, telangiectasis and hirsutism. Epilation in France cannot be performed except under medical supervision. Although a doctor was attached to the staff of the institute, his office was so placed that he could not exert the supervision required for these operations. This physician was sued for complicity in illegal practice of medicine by not reporting to the legal authorities the measures which were being used in this institute. It must be pointed out that he was also liable to disciplinary action according to Article 21 of the French Code of Ethics which forbids a physician to give consultations in commercial establishments where drugs or apparatus are sold, and Article 10 of the same Code which stipulates that a physician should not practise medicine in circumstances which may discredit the profession—a beauty institute being considered hardly compatible with professional dignity. The author points out that several such institutes advertise openly all forms of medical treatment and as such he wonders how many should fall under the same legal action.

CYTOPATHOGENIC AGENTS IN ACUTE LARYNGO- TRACHEOBRONCHITIS

Acute laryngotracheobronchitis (croup) is one of the leading causes of admission to the Hospital

(Continued on page 70)

FARMER'S WIFE IN THE NEWS

The continually growing demand for Farmer's Wife has resulted in a further expansion of production facilities in the Atlantic Provinces.

For almost a year, Central Creameries Limited of Charlottetown, has been manufacturing Farmer's Wife at Charlottetown under the direction of Cow & Gate technicians to Farmer's Wife high quality specifications. Both companies have found this so advantageous that an arrangement has been entered into by which Cow & Gate (Canada) Limited will have a half interest in Central Creameries Limited.

This arrangement will result in greatly increased production capacity and improved distribution facilities for Farmer's Wife in the Maritimes.

Now celebrating its 25th year of business in Canada, Cow & Gate is a subsidiary of a British company founded in 1750.

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MEDICAL NEWS in brief
(Continued from page 68)

for Sick Children, Toronto, but its etiology is obscure. Beale and his colleagues (*Brit. M. J.*, 1: 302, 1958) described the isolation after tissue culture of cytopathogenic agents from the tracheal or nasopharyngeal secretions of 10 out of 15 patients admitted during the 1955-56 winter. Human amnion cells proved satisfactory for the isolation, and the agents isolated resembled the group of viruses causing influenza and mumps.

Neutralizing antibodies developed during convalescence in the six cases tested.

SYMPOSIUM ON RECENT DEVELOPMENTS IN RESEARCH METHODS AND INSTRUMENTATION

The Eighth Annual Research Equipment Exhibit and Instrumentation Symposium will be held May 12-14 at the National Institutes of Health, Bethesda, Mary-

land. The symposium is sponsored by the Washington Sections of the American Association of Clinical Chemists, American Chemical Society, Instrument Society of America, Professional Group on Medical Electronics of the Institute of Radio Engineers, Society of American Bacteriologists, and Society for Experimental Biology and Medicine. Further information from: James B. Davis, Executive Secretary, National Institutes of Health, Bethesda 14, Md., U.S.A.



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INTRATHECAL PHENOL FOR INTRACTABLE PAIN: SAFETY AND DANGER OF THE METHOD

Nathan and Scott (*Lancet*, 1: 76, 1958) discuss the toxicity of phenol in ethylphenylundecylate (Myodil) and of silver nitrate in phenol and glycerin injected intrathecally for the relief of intractable pain. Thirty injections of phenol as Myodil have been given, and in 29 no undesirable reactions were observed following the injection. In one case a very slight disorder of defaecation due to infiltration of the pudendal nerves by cancer was present before injection. After the injection, retention of urine and loss of anal sensation developed. Thirteen cases received injections of silver nitrate in phenol and glycerin. Slight increase of already existing weakness of limbs developed in six, increase of already disturbed micturition in two cases, and an increase of already disturbed control of defaecation in one. One patient died two days after the injection after a severe meningeal reaction. In this case leptomeningitis was found at necropsy. Seven patients who had injections of phenol as Myodil eventually died from cancer. In none was there any macroscopic abnormality of the spinal cord or the roots which could be attributed to the injection. Spinal fluid changes in nine cases after injection of Myodil were very slight. Relief of pain was obtained in about half the cases. The authors conclude that at least 1 ml. of a 7.5% solution of Myodil can safely be injected intrathecally. The solution of silver nitrate in phenol and glycerin is less safe than phenol in Myodil.